

# AMERICAN FRUIT GROWER



FEBRUARY

9 3 7

FRUIT



**YOU  
CAN ALWAYS  
GET TO  
TOWN**

# *with* **Firestone** **GROUND GRIP TIRES**

**GROUND GRIP TIRES** bring a new freedom to the farmer — freedom to go anywhere, any time, in any weather. No longer do bad roads, snow and thaws mean isolation.

In deep snow, mud or sand, Firestone Ground Grip Tires go right through without spinning or stalling — you can always get to town.

The Firestone Ground Grip Tire was developed to overcome the difficulties of winter transportation on the farm. Firestone engineers, working under the personal direction of Harvey S. Firestone on his Columbiana, Ohio, farm, tested and proved the Ground

Grip Tire under the worst possible weather and road conditions. This tire is so different in design and so superior in performance that a patent on it was issued by the United States Patent Office. The heavy rubber lugs of the tread are without equal for traction. They take hold and keep going where other tires get stuck — and you don't need chains.

Don't let bad roads and bad weather keep you isolated this winter. See your nearby Firestone Implement Dealer, Firestone Tire Dealer or Firestone Auto Supply and Service Store today.

*Listen to the Voice of Firestone featuring Richard Crooks—with Margaret Speaks, Monday evenings over Nationwide N. B. C. Red Network*

**THE GREATEST TRACTION TIRE EVER BUILT**

Copyright 1937, Firestone Tire & Rubber Co.

On  
practic  
John  
orchar

But  
this "  
choic  
In  
means

Wi  
fuels  
for th  
cost fr  
They

Be  
design  
success

You  
Tracto  
struct  
indep  
... t  
ity of  
ability  
greater  
better  
difficul

You  
amoun  
sion w  
the bel

Littl  
perform  
... th  
are cho  
able po  
Deere

C  
Yo  
by  
the  
rel  
lab  
ren

S  
FEBRU



# Get the Plus Value of this 7 Quarts to a Gallon!

On the basis of simplicity, dependability, and practical operating features, you'll recognize the John Deere as *the* economical, profitable grove or orchard tractor to own.

But when, in addition, you get the economy of this "7 Quarts to a Gallon," the reasons for your choice are little short of overwhelming.

In terms of dollars and cents here's what this means to you.

With the John Deere Tractor and the low-cost fuels you get from 75 to 85 per cent more power for the same fuel dollar. This is because these fuels cost from 3 to 5 cents a gallon less than gasoline. They are also about 10 per cent more powerful.

Because the John Deere is *one* tractor specifically designed to burn these low-cost fuels efficiently and successfully, you fully utilize this greater power.

You'll like John Deere Grove and Orchard Tractors for other reasons too—the low-down construction . . . the smooth, flowing lines . . . the independent braking of rear wheels for short turns . . . the integral power take-off . . . the simplicity of two-cylinder engine design . . . the dependability of the fewer and sturdier parts . . . the greater ability to stand up to heavy loads . . . the better distribution of weight for greater traction in difficult field conditions.

You'll appreciate the greater power for a given amount of weight . . . the straight-line transmission with no bevel gears to consume power . . . the belt pulley right on the crankshaft.

Little wonder that John Deere economy and performance is the yardstick of tractor value today . . . that an ever-increasing proportion of farmers are choosing the John Deere for low-cost, dependable power. Talk to your neighbors who own John Deere Tractors . . . to your John Deere dealer.



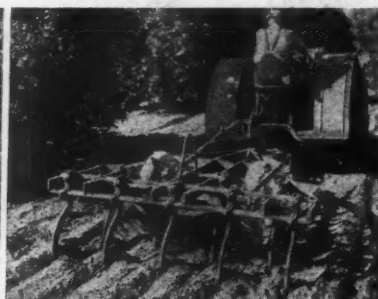
Here's the new John Deere Stream-line Orchard Tractor. There's not a thing to catch branches to injure blossoms, to bruise fruit. Handles load of six horses.



John Deere Orchard Tractors easily slip under the low-hanging branches. Scene shows a Model "AO" with John Deere Disk Harrow.



Seed-bed maker, weed-destroyer, cultivator—master of many jobs is this John Deere-Van Brunt Model "CC" Cultivator. Shown with a Model "BO" Tractor.



The John Deere No. 3 Orchard Cultivator keeps out weeds and mulches the soil. Shown here with a Model "AO" Tractor.



With this Model "OR" Disk Harrow, you can make turns to either right or left without stopping. Shown here with a John Deere Model "BO" Orchard Tractor.



This John Deere Tractor-Controlled Weed Destroyer gets to the bottom of the weed question and rips out roots and underground stems.

## Coupon Below Brings FREE Book

You'll want a copy of this booklet, written and illustrated for us by the hundreds of farmers from coast to coast who have bought their second, third, fourth, eighth, tenth John Deere Tractor. It tells the story of their experiences, of their economies, of the time, labor, money they saved with John Deere Tractors. It's the most remarkable booklet ever written about farm tractors.



JOHN DEERE,  
Moline, Illinois. Dept. E-342

Please send me a FREE copy of your booklet, "Extra Helpings" and complete information on John Deere Grove and Orchard Tractors. Also send information on the equipment I have checked.

Name

Town

State  R.F.D.

- ☐ Grove Plows
- ☐ Disk Harrows
- ☐ Weed Destroyers
- ☐ Field & Orchard Cultivators
- ☐ No. 3 Orchard Cultivator
- ☐ Engines
- ☐ Power Mowers
- ☐ Trailer Gears



# JOHN DEERE

## TWO-CYLINDER TRACTORS

# SIMPLE — ECONOMICAL — DEPENDABLE



CONTROL CODLING MOTH AND ASSOCIATED PESTS

# GRASSELLI

## Arsenate of Lead

*..... A High Deposit Lead  
Compatible with Summer Oils*

High in killing power, high strength, good suspension, high deposit, compatibility with summer oils, and ability to work well through long lines and nozzles, makes Grasselli Arsenate of Lead the better lead for better control of codling moth.

Containing as high a percentage of killing ingredients as is possible to incorporate in an approved commercial lead, Grasselli Arsenate of Lead assures you a high percentage control of codling moth. It contains the proper controlled relation of water soluble arsenic to arsenic oxide, which assures a quick kill without harmful effects to fruit and foliage, under normal conditions.

When Grasselli Arsenate of Lead is used with summer oils, the combination acts both as an insecticide and an ovicide—thus offering additional control of codling moth broods and protection against stings.

For QUALITY and DEPENDABILITY you make no mistake when you specify Grasselli Arsenate of Lead.

Bordeaux Mixture  
Calcium Arsenate  
Dutox\*

Dust Mixtures  
Lime Sulphur Solution  
Lovo\*

E. I. DU PONT DE NEMO  
GRASSELLI  
General Offices



THERE'S NO BETTER CROP PROTECTION THAN GRASSELLI



MAXIMUM YIELD OF CLEAN FRUIT

# NuREXFORM

## Arsenate of Lead

*... A High Suspension Lead  
Compatible with Lime Sulphur*

NuREXFORM is unusually effective in controlling codling moth and many other chewing insects. It is the ideal Arsenate of Lead for combining with Lime Sulphur, the natural reaction being reduced to a minimum.

NuREXFORM remains in suspension. No settlements in the tank of your sprayer—no sediment to be scraped off the bottom and thrown away.

NuREXFORM is of uniform strength always. The coverage is not too thin and watery on the first trees sprayed—nor too heavy on the last trees. This even coverage leaves no unprotected gaps where chewing insects may attack.

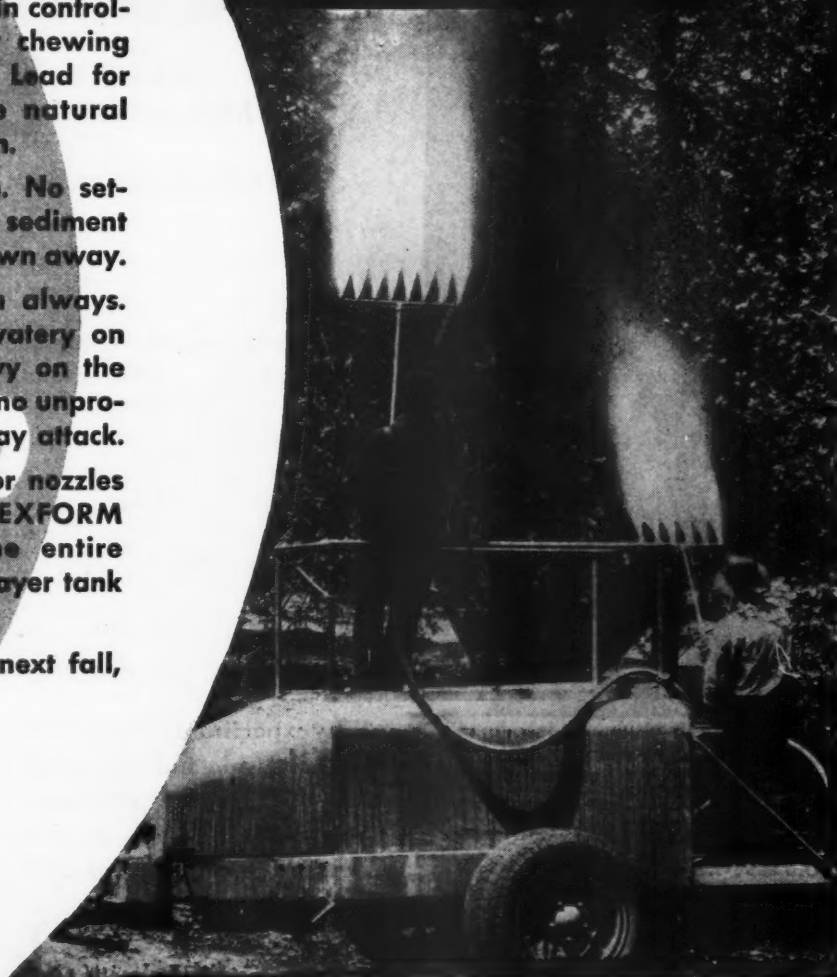
NuREXFORM will not clog screens or nozzles when used in a clean tank. NuREXFORM assures uniform protection for the entire orchard. Every ounce put into the sprayer tank reaches your trees—no waste.

For a larger pack of premium fruit next fall, be sure to use NuREXFORM.

Parachlorobenzene  
Sulfone  
Grassell Spreader

Sulphate of Nicotine  
Sulphur  
And many others  
(Reg. U. S. Pat. Off.)

DEMOURS & CO., INC.  
CHEMICALS DEPT.  
CLEVELAND, OHIO



GRASSELL SPRAY AND DUST CHEMICALS

# A New Service

## NOW YOU CAN BUY **SUNOCO** SELF EMULSIFYING **SPRAY**

**Direct from Our Nearest Branch Office**  
*Thus Insuring Prompt Delivery*

Akron	Cincinnati	Jacksonville	Reading
Albany	Cleveland	Johnson City, N.Y.	Richmond, Va.
Allentown	Columbus	Johnstown, Pa.	Rochester
Atlantic City	Cumberland, Md.	Lansing, Mich.	Scranton
Altoona	Dallas	Newark, N. J.	Syracuse
Baltimore	Dayton	Newark, N. Y.	Toledo
Battle Creek	Detroit	Newburgh, N. Y.	Trenton
Beaumont	Flint	New York	Washington, D. C.
Beaver, Pa.	Grand Rapids	Philadelphia	W. Brownsville, Pa.
Bridgeport, Conn.	Greensburg, Pa.	Pittsburgh	Wheeling
Buffalo	Harrisburg	Providence	Williamsport, Pa.
Chicago	Jackson, Mich.	Quincy, Mass.	Wilmington, Del.
			Youngstown, O.

**SUN OIL COMPANY, Ltd., Montreal and Toronto**

Why experiment when thirteen years of wide and successful use has proved the efficiency of **SUNOCO SPRAY** in delayed dormant spray control of Scale

Insects, Red Mite, Apple Aphis and Red Bug?

**SUNOCO SPRAY** is a safe and effective petroleum product for dormant and delayed dormant use.

## **SUN OIL COMPANY**

*Sunoco Spray Department F*

**1608 Walnut Street • Philadelphia**

*Producers of Blue Sunoco Motor Fuel*

**CRESYLIC ACIDS OR TAR OILS  
CAN BE ADDED TO SUNOCO SPRAY**

**WRITE**  
**TO THE NEAREST BRANCH OFFICE**  
**OR DIRECT TO SUN OIL COMPANY**

*Sunoco Spray Department F, Philadelphia,  
for Literature and Information.*

Name \_\_\_\_\_  
Address \_\_\_\_\_  
F



# AMERICAN FRUIT GROWER

TITLE REGISTERED IN

U.S. PATENT OFFICE

FEBRUARY

1937

VOL. 57

THE NATIONAL FRUIT MAGAZINE

NO. 2

## A PROMISE OF STILL GREATER PROGRESS IN FRUIT GROWING

"THE good things which belong to Prosperity are to be wished, but the good things that belong to Adversity are to be admired."

This was said, centuries ago, by Seneca, a famous Roman philosopher. It could be voiced today, however, by any fruit grower willing to contemplate his spraying problems philosophically. In fruit growing, as in any other economic undertaking, progress is brought about by the problems encountered. And since the need for spraying has always been one of the greatest problems of fruit growing, just so has it proved to be our greatest field of progress.

The very magnitude of the problem forces science to search unceasingly for new and better methods of meeting it. The trite but ever true fact that "necessity is the mother of invention" brings continual mechanical improvement in machines and devices with which to fight disease and insect enemies. And the year in, year out challenge of it all makes each grower a better grower. That revered pioneer, and present-day philosopher of horticulture, Dean L. H. Bailey, had this well in mind when he wrote in his book, "The Principles of Fruit Growing," that, "aside from its direct and immediate importance, spraying has had a very marked secondary effect in waking up the horticulturist. It has raised the standard of intelligence. Any movement that sets a man thinking very strongly along one line is likely to awaken his interest in related subjects. So it happens that spraying has been one of the means of rapidly diffusing a better knowledge of horticultural operations."

Turn the pages of this magazine. In advertisement after advertisement you will see pictured the very latest and most modern

spraying equipment. Here is a streamlined tank, motorized for high pressure spraying. There is a spray-gun scientifically designed to do your spraying more quickly, more thoroughly, more easily. If you do not believe, or, perhaps, cannot fully realize the progress made, and being made, then compare the spraying equipment advertised in this February's Spraying Number with that offered in last February's special Spraying Number, and in that of the previous year, and the year before that, and the year before that—back, in fact, as far as your file of *American Fruit Grower* goes. You will be surprised and stimulated by the progress made in a comparatively short span of years.

How the horticulturist of a hundred years

ago would envy the fruit grower of today could he return and see the mechanical improvements in spraying. At the time of the discovery of Bordeaux mixture in the grape country of southern France, it was applied (believe it or not) by splashing on the vines with a broom.

William Forsyth in, "A Treatise on the Culture and Management of Fruit Trees," published in London in 1802, knowingly details directions for the use of nicotine sprays. The procedure was to soak sponges in tobacco water and then rub them over the leaves of the afflicted trees. And in those days dry insecticides and dusts were applied either by means of a hand bellows or by blowing lustily through a tube.

As pointed out by Metcalf and Flint in their book, "Destructive and Useful Insects," the "development of spraying and dusting machinery has been largely an American achievement, of which we may be justly proud."

This development of spraying machinery to present-day standards of high efficiency is especially noteworthy when it is realized that this development has had to encompass the following requirements:

1. Adapting sprayer sizes to all sizes of orchards.
2. The development of sprayers that deliver the spray fast enough to cover the plantings quickly and thoroughly.
3. Pumps and nozzles that will efficiently deliver all types of materials and the development of proper power sources for operation of the pump.
4. Sprayers and dusters which will operate at high efficiency over all types of ground and under all conditions.
5. The development of a series of re-

(Continued on page 45)

## CONTENTS

Where Are We So Far As Substitutes for Lead Arsenate Are Concerned?..... 9  
By Leroy Childs

A Symposium of Opinion on Lead Arsenate Substitutes.....10

Sour Cherry Sprays.....12  
By E. J. Rasmussen and Donald Cation

Mild Sprays for Preventing Apple Scab.....13  
By F. H. Ballou and I. P. Lewis

Spraying Orange Trees for Black Scale.....14  
By Ralph H. Smith

Pest Control in Florida Citrus Groves.....15  
By A. F. Camp, W. L. Thompson and Wm. A. Kuntz

Sanitation Measures in the Apple Orchard.....16  
By G. E. Marshall

Bait Traps for the Oriental Fruit Moth.....18  
By M. L. Bobb

Insect Close-Ups.....20  
American Pomological Society

A Page Conducted in the Interests of the Society

State News From Near and Far.....26

Codling Moth Forecast for 1937.....28  
By William H. Zipf

Camera!.....43

Status of Work with Blight Resistant Chestnuts.....44

New Time and Money Savers.....45  
By Handy Andy

Successful Orchards.....46  
A "Round Table" Page for Every Grower

AMERICAN FRUIT GROWER

### AMERICAN FRUIT GROWER

Published Monthly by

AMERICAN FRUIT GROWER PUBLISHING CO.  
1370 Ontario St., Cleveland, O.

SUBSCRIPTION RATES

Domestic, Except Cleveland, 3 years \$1.00. 1 yr. 50c.  
Cleveland and foreign (except Canada) \$1.00 per year.  
Canada, 50c per year.  
Entered as second-class matter at Post Office at Cleveland, Ohio, under the Act of March 3, 1879. Additional entry at Mount Morris, Illinois.

ROGER FISON, EASTERN MGR.,  
Room 1212, 30 Rockefeller Plaza  
Phone—Circle 7-1863

NATIONAL ADVERTISING REPRESENTATIVES: J. C. Billingslea Co., 123 W. Madison St., Chicago, Phone Central 0465; 415 Lexington Ave., New York City, Phone Murray Hill 2-3912.  
FEBRUARY, 1937

### E. G. K. MEISTER

Publisher

DEAN HALLIDAY

Managing Editor

EDNA ANNE KRAUSE  
Associate Editor

T. J. TALBERT  
Contributing Editor

DR. J. H. GOURLEY

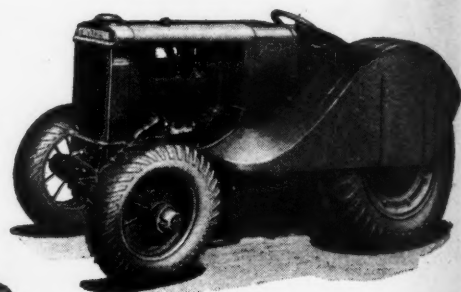
Associate Editor

WILLIAM H. ZIPF  
Field Editor

MARY LEE ADAMS

Home Economics Editor  
PAGE 7

# Choose Carefully, for Years and Years of Good Work—Buy a McCORMICK-DEERING ORCHARD TRACTOR



Here are two views of the popular McCormick-Deering Model 0-12 Orchard Tractor. It is shown above equipped with special citrus fenders and at the left with standard equipment. The Model 0-12 is a handy, compact, powerful little tractor that fits in well in most orchard, grove, and vineyard operations.

When you go out to buy your new tractor for grove or farm work make sure you choose an outfit that will bring you *all* the benefits of power farming. Efficiency varies in the various tractors on the market. Convince

yourself before you buy that your choice gives you every advantage that is to be had. Make a study of the McCormick-Deering 0-12 and find out why it heads the list of popular grove tractors.



Above: Disking a young orchard with a McCormick-Deering outfit. TracTractors are available in three sizes: Model T-20 (shown), Model TA-40, and Model TD-40 Diesel.

Our long experience; our facilities for scientific research, engineering, and manufacturing; and our network of Company-owned branches and servicing dealers enable us to offer you the best in grove tractors, all-purpose tractors, standard-tread tractors, and crawler tractors. The picture above shows you the McCormick-Deering 0-12. Ask the nearest McCormick-Deering dealer to show you the tractor itself, equipped for your work. Or ask him to bring an 0-12 out to your place for a demonstration. All McCormick-Deering tractors—and McCormick-Deering equipment to work with them—can be bought on the EASY-PURCHASE PLAN, with payments arranged to meet your individual requirements.

**INTERNATIONAL HARVESTER COMPANY**  
(Incorporated)

606 So. Michigan Ave.

Chicago, Illinois

## McCORMICK-DEERING TRACTORS





Modern equipment enables the present-day grower to apply his sprays with a thoroughness difficult of attainment in bygone years. Golden Russets in the Leelanau Orchards at Omena, Mich., shown above, are receiving the pre-pink spray at the rate of 35 gallons of spray a minute or 7000 gallons in 10 hours. Photograph courtesy Caterpillar Tractor Co.



Leroy Childs, the author of this article and superintendent and entomologist at the Hood River Branch of the Oregon Agricultural Experiment Station.

## WHERE ARE WE SO FAR AS SUBSTITUTES FOR LEAD ARSENATE ARE CONCERNED?

By LEROY CHILDS

Oregon Agricultural Experiment Station

THE apple grower, alert to the residue situation, is asking at this time, "Have you a satisfactory substitute for lead arsenate that may be employed in my spray schedule next season?"

Insofar as my own experiences go—covering a period of 22 years—it is mandatory that this question be answered in the negative. Continued use of established standard methods is of particular importance in all districts where codling moth activity has proven to be a serious factor. Also, in districts where mixed programs are required to combat fungous diseases and insects other than the codling moth, established practices should be followed.

Fruit growing in general, and apple growing in particular, is a highly speculative game. The fruit grower bets his bank account that he will grow

a clean, salable commodity. If he holds worms, stings, or spray-burned fruit, when the showdown comes, he is out of the game either temporarily or permanently.

Who of us now working on new spray materials is so brave, or, perhaps better, so indiscreet as to place a grower in a possible predicament of this sort due to untimely recommendations? A change from standard procedure is quite likely to result in such a catastrophe if the new spray material suggested has not been checked and checked and rechecked again. Five or 10 years' experience is none too much.

Extremes in weather conditions—important factors determining the performance of sprays from both the standpoint of injury and control—are

very rarely encountered by the investigator. A knowledge of the effects of extremes are of greater importance than mean or average conditions. It is the exceptional condition that leads to difficulty and loss.

Experience teaches us that these extraordinary developments occur. The most discouraging feature in the development of a substitute for lead arsenate is that of finding a material which will be, under all climatic conditions, entirely compatible with various fungicides and insecticides that must be applied at times either in combination or in association with a poison spray. It will take even longer to establish the relationship of this compatibility than the determination of effectiveness of the new material used alone.

These are a few arguments pointing—  
(Continued on page 29)

# WHERE ARE WE SO FAR AS SUBSTITUTES

## A SYMPOSIUM OF OPINION AND FORECAST

**FROM** a practical standpoint there is no substitute for lead arsenate for codling moth wherever this orchard pest is fairly difficult to control.

Calcium arsenate is used with satisfactory results in a few isolated mountain orchards where the codling moth never has been difficult to control, but in our commercial orchard centers it has failed to give satisfactory control.

Furthermore, calcium arsenate under our conditions is not safe, except when used with Bordeaux mixture.

Nicotine in the form of nicotine bentonite (improved formulas) and also as nicotine sulphate combined with summer oil has given results equal to or even better than lead arsenate, but these materials are too expensive to use in the number of sprays required for adequate codling moth control.

Natural cryolite plus fish oil has given results equal to lead arsenate, but the problem of fluorine residue and its removal provokes difficulties equal to or more complicated than lead residue and its removal.

Phenothiazine has failed to give satisfactory control up to the present time.

**TO** date only two really promising substitutes have been found for arsenate of lead. It has been found possible to use calcium arsenate in certain of the sprays on early apples. Where this material has been used in two sprays on early apples in southern Illinois, the arsenical residue on the fruit at harvest time does not exceed the Federal tolerance. The finish of the fruit has been good. We have not found it possible to use calcium arsenate on fall and winter varieties for the entire spray program.

Thus far the most satisfactory substitute for lead arsenate has been nicotine. During the past three years we have carried on tests with various fixed nicotines. Some of these materials have proved very satisfactory substitutes for lead arsenate and apparently in our western Illinois section can be depended upon to give good control when they are used throughout the season.

Tank mixed nicotine-bentonite and soybean oil has given as good or better control of codling moth than has been obtained with lead arsenate. Black Leaf 155-X and 155-Z have given very satisfactory codling moth control.

The fixed nicotines are the only products we can recommend at the present time.

**THE** present status of lead arsenate and its various substitutes as applicable to Ohio conditions may be summarized as follows:

From the standpoint of cost and efficiency, lead arsenate is still the best insecticide. It should never be omitted in the calyx spray. However, the use of lead arsenate after the second cover spray will almost surely produce excess spray residues.

Non-lead arsenicals (calcium, zinc, etc.) are less effective than lead arsenate, and their use in all-season schedules is not recommended. However, in orchards where insects are well controlled they may be used in late-season sprays at one and one half times the usual strength of lead arsenate and with additional lime.

Natural cryolite (the best of the fluorine sprays) when used in pre-pink and pink sprays is highly effective against apple flea weevil. With summer oil it is fairly effective against codling moth but its use after the second cover spray also gives excess residues. Not recommended for codling moth.

Nicotine if applied frequently is effective against codling moth but not against apple maggot.

Phenothiazine has shown promise as a control for codling moth on the Pacific Coast, but experiments in Ohio and elsewhere in the East show that in its present form it is not suited to eastern conditions.

*W. S. Hough*

*W. P. Flint*

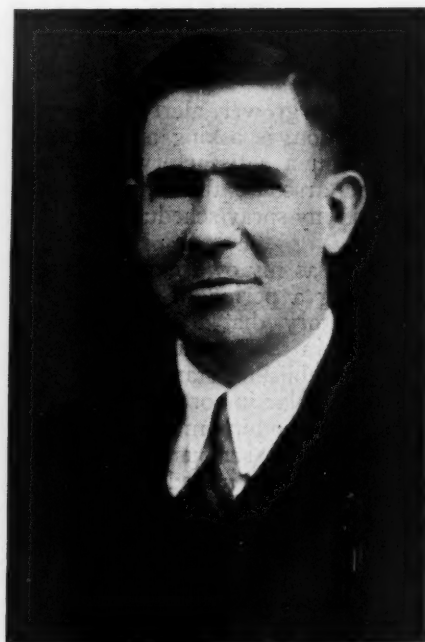
*C. R. Cutright*



W. S. Hough, Entomologist  
Virginia Agricultural Experiment Station  
PAGE 10



W. P. Flint, Chief Entomologist  
Illinois Agricultural Experiment Station  
AMERICAN FRUIT GROWER



C. R. Cutright, Associate Entomologist  
Ohio Agricultural Experiment Station  
FEBRUARY, 1937



# FOR ARSENATE OF LEAD ARE CONCERNED

BY SOME OF THE COUNTRY'S LEADING AUTHORITIES

**NICOTINE**, phenothiazine, calcium arsenate, and basic zinc arsenate are receiving most attention as lead arsenate substitutes. All have failed to equal the standard set by lead arsenate considering cost, safeness, and all around efficiency and dependability. However, the advantages possessed by lead arsenate may be outweighed if a washing problem is eased or avoided by using another material.

Most codling moth investigators perhaps see the greatest possibilities in nicotine. It has been successfully used either in combinations having bentonite clay as a base or with white oil (summer oil) emulsions. Two objections to nicotine are cost and its apparent lack of toxicity to apple maggot. Phenothiazine seems to be highly toxic to codling moth but little is known yet about its practical possibilities.

We have escaped a washing problem thus far in eastern New York partly by substituting calcium arsenate in the later sprays. However, both calcium arsenate and basic zinc arsenate have not proved sufficiently effective, in general, to replace lead arsenate in the heavily infested areas. All calcium arsenates have produced more or less foliage burn under some conditions, and even the newer so-called safer or stabilized products should be used with some corrective.

**THE** Michigan State College Agricultural Experiment Station has studied the question of a replacement material from two standpoints: 1) the possibility of using non-lead arsenicals; and 2) the use of non-arsenical non-lead materials. In this search we have discarded fluorine, magnesium, and manganese-arsenate, zinc arsenite, and numerous organic materials that have at one time or another shown promise.

During the past three seasons work has been restricted to two main lines: 1) combinations of zinc and calcium arsenates with correctives and stickers, and 2) nicotine combinations. All tests have been in direct comparison with lead arsenate sprays.

As a result of tests, combinations have been found of zinc arsenate with stickers and correctives which have given results strictly comparable to lead arsenate from the standpoints of control, injury, and cost without excess arsenical or lead residue. Some proprietary fixed nicotine combinations have given equal freedom from insect damage and eliminated consideration of residues. Nicotine-oil has also given consistently good results.

As a result, we believe that we have for Michigan conditions adequate replacement materials for lead arsenate.

**PHENOTHIAZINE**, according to E. J. Newcomer of the Bureau of Entomology and Plant Quarantine, has possibilities as a lead arsenate substitute.

Data do not justify recommending it, but three pounds to 100 gallons with soap gave twice as good control as did standard treatments of lead arsenate.

The percentage of wormy fruit resulting from phenothiazine used with mineral oil emulsified with casein or with Triethanolamine oleate is equal to the percentage obtained when using lead arsenate with these materials, and the percentage of stings is much less.

This material reduces the color somewhat but apparently has no effect upon fruit size; residue removal should be simple.

Under some conditions phenothiazine definitely affects the orchard men causing a burning of the skin similar to sunburn.

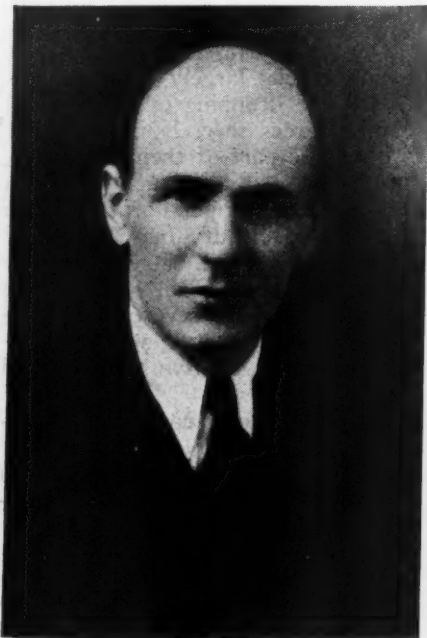
The work started by James Marshall in 1933 and continued by him since that time indicates that calcium arsenate is not suited for heavy infestations.

When combined with mineral oil, it is believed that it may be used as effectively as arsenate of lead combined with fish oil.

*P. J. Chapman*

*Ray Hutson*

*J. C. Snyder*



P. J. Chapman, Chief in Research (Ent.)  
New York Experiment Station  
FEBRUARY, 1937



Ray Hutson, Head, Dept. of Entomology  
Michigan State College  
AMERICAN FRUIT GROWER



J. C. Snyder, Extension Horticulturist  
State College of Washington

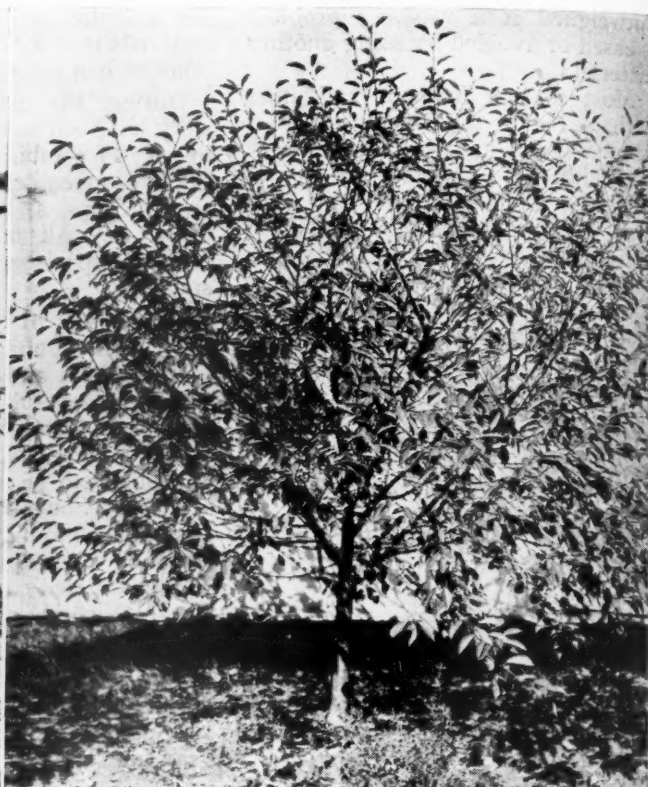
# SOUR CHERRY SPRAYS

By E. J. RASMUSSEN  
Research Associate in Horticulture

and

DONALD CATION  
Research Ass't in Plant Pathology

MICHIGAN STATE COLLEGE



**T**HE control of diseases and insects is one of the most important factors in the successful production of sour cherries in Michigan. The pests most commonly found in the orchards are cherry leaf-spot, fruit fly, brown rot, curculio, slugs and black cherry-aphis. Of these pests cherry leaf-spot can account for the most serious and lasting damage.

Cherry leaf-spot, known also as shot-hole and yellow-leaf, is caused by the fungus, *Coccomyces hiemalis*. This disease does not occur in epidemic form every year, since its development depends on climatic conditions. The fungus lives over winter in old leaves on the ground. Under favorable weather conditions, that is, during rainy periods, spores develop and are discharged from these old leaves into the air. Carried by air currents, the spores which reach the young leaves cause primary infections on the new foliage. The spots on the leaves are visible usually in from eight to 10 days after infection occurs.

Within the infected spot or lesion

This is a popular article on Experiments on Spraying Sour Cherries in Michigan. The complete report will appear in the February issue of the Quarterly Bulletin Vol. 19, No. 3, published by the Michigan State College.

another type of spore is developed. These spores are commonly called summer spores. These summer spores are not wind borne but are splashed by rains from one leaf to another where they germinate causing secondary infection and further spread of the disease. During seasons of abun-

Comparative treatments in injury study block are shown in the above illustrations. Where leaf-spot is controlled, lime-sulphur is the best treatment.

Left—Tree sprayed with lime-sulphur 1-40, four applications. Picture taken September 25, 1936. Note heavy foliage and vigorous condition of the tree.

Right—Tree sprayed with 6-8-100 high-calcium lime Bordeaux, four applications. Note heavy defoliation and upward curling of the leaves—typical Bordeaux injury. Picture taken September 25, 1936.

dant rainfall the spread of the disease may be very rapid on leaves not properly protected by a suitable spray.

The injury caused by the leaf-spot disease results largely from the yellowing and dropping of the infected leaves. Trees severely infected may lose a large part of their foliage before harvest. Under such conditions the fruit fails to ripen normally. Even more serious injury may result, for trees weakened and starved by early defoliation are frequently killed if the following winter is severe. Trees defoliated early for two years in succession rarely survive even a mild winter.

Leaf-spot can be controlled. Growers who spray on time and thoroughly every year seldom suffer any serious loss from this disease. Failure usually results only when growers become lax in their spray methods following several years of light infection. The severity of infection is not predictable and the successful grower applies all of the necessary sprays.

(Continued on page 30)





**F**IFTEEN years ago, at the beginning of a special project in combating apple blotch and apple scab in southeastern Ohio, we inaugurated use of unusually mild or dilute fungicidal sprays very carefully and thoroughly applied. Old-time, highly concentrated mixtures were discontinued, with determination never again to re-employ them unless the much modified sprays that we proposed to give fair trial should prove inadequate to protect foliage and fruit of the apple from the more prevalent fungous diseases. Much milder formulas and less dangerous forms of fungicidal materials have favored development of clean, healthy foliage and sound, well-finished fruit.

At the time of starting this series of spraying tests in the spring of 1922, the so-termed "standard" or 8-8-100 Bordeaux mixture, during a period of nearly 20 years, had been used as an all-round, all-season spray by the then rather rapidly decreasing proportion of apple growers who doubtless remained sincere in their contention that a strong copper-lime combination composed the only dependable fungicide. A new compound had appeared, however, as a competitor of Bordeaux and was more and more favorably appealing to orchardists.

Commercial liquid lime-sulphur, the newer fungicide just referred to, had been on the market 12 years, having been first introduced in Ohio in one of our department's earlier spraying projects in the spring of 1910. This lime-sulphur compound, even as persistently as that of 8-8-100 Bordeaux, was being used at all seasons, in all kinds of weather and on all varieties of apples, according to the manufacturers' recommended or "standard" formula of two and one-half gallons of the concentrated solution to 100 gallons of water.

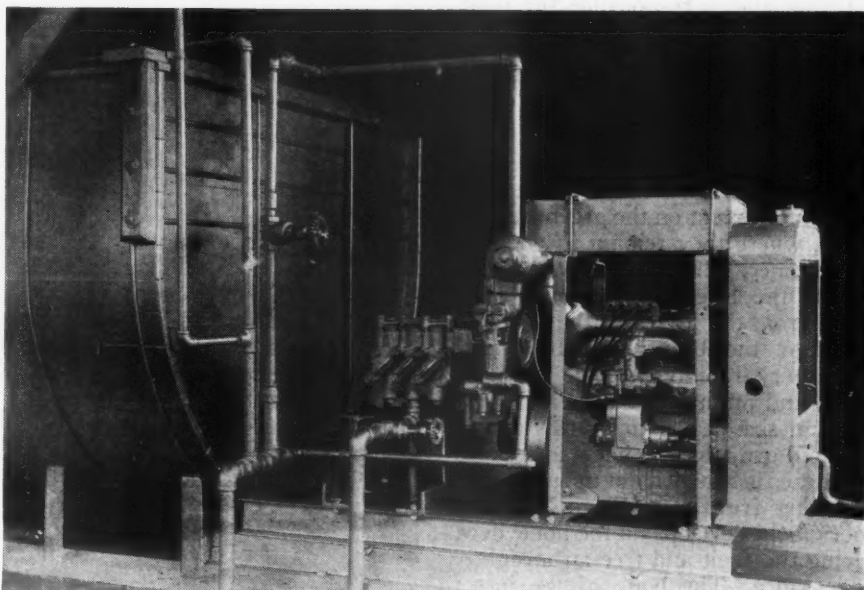
Instead of attempting to discuss the great mass of data resulting from the spraying experiments above referred to, we will present the sequel to these

# MILD SPRAYS

## *For Preventing Apple Scab*

By F. H. BALLOU and I. P. LEWIS

Ohio Experiment Station



experiments which more or less directly affects sprays and spraying practices at the present time:

First, the old-time Bordeaux mixture of 8-8-100 proportions of copper sulphate and lime is virtually eliminated as a preventive of scab and other fungous diseases of the apple in Ohio. In substitution, as a formula for combating bitter rot in the few areas where this highly destructive disease is a menace, a 4-8-100 or 4-10-100 Bordeaux formula is advised for the spray applications eight and 10 weeks after petal-fall.

For orchard sections in which apple blotch or Brooks spot, or both, have been troublesome during the summer spraying period, Bordeaux formulas of 2-6-100 or even 1½-5-100 carefully and thoroughly applied two, four, and in exceptionally dangerous localities and seasons, six weeks after petal-fall, are recommended as highly efficient and dependable. Obviously, therefore, orchardists so situated that bitter rot, blotch and Brooks spot are likely to attack the growing apples, are compelled to depend partially or wholly on weak Bordeaux mixture as a fungicide following the petal-fall period of spraying.

(Continued on page 36)

AMERICAN FRUIT GROWER.



Top—After all is said and done the truth remains that Timeliness and Thoroughness in application of sprays are of the utmost importance.

Center—A modern stationary spray plant at the Dale View Test Orchards, central Ohio.

Bottom—The tops of the trees are readily reached with a fine, misty spray, providing sufficient pressure is available. Modern spraying machines are built for such work.

# SPRAYING ORANGE TREES FOR BLACK SCALE

By RALPH H. SMITH

California Agricultural  
Experiment Station

**S**CALE insects are the most important pests of orange trees in California. Descriptive of color, the common names of the four principal species are the red scale, the purple scale, the gray scale, and the black scale.

The black scale has the widest distribution and is responsible for most of the spraying and fumigating of orange trees. It belongs to the class of scale insects known as lecanium or soft scales. Each female scale produces about 2000 eggs. The eggs hatch during June and July. The young insects settle on the leaves, and to a minor extent on the green bark of twigs, where they remain throughout the summer, fall and most of the winter. In the latter half of winter they move from the leaves to the terminal parts of the branches. Here they grow very rapidly, become black in color, and attain the dimensions of a medium size pea. During this period of rapid growth, honeydew in copious quantities is squirted out upon the surrounding fruit and foliage. A black sooty mold develops on the honeydew, giving the fruit and tree an unsightly appearance. The body of the insect finally becomes transformed to a mass of eggs.

Spraying starts as soon as the eggs have hatched, and is done mostly during August and September. At this time the insects are very small and are easily killed by oil spray. That is, they are easily killed providing they are hit by the spray. Effective control, in other words, is largely a matter of thoroughness of spray application;

but the accomplishment of the desired degree of thoroughness is by no means simply made. A good sized orange tree bears about 100,000 leaves. The average leaf has a surface area, dorsal and ventral, of about eight square inches. The leaves form a dense wall, as it were, two or three feet in thick-



ness, which becomes less dense toward the central portion of the tree. One cannot look through an orange tree and see daylight on the opposite side.

With a moderately heavy infestation, there may be 100 insects to the leaf, or a total of one hundred million insects to the tree. To one who is not accustomed to dealing with such tiny objects, the insects might be regarded as microscopically small. Several insects can be placed within an area no larger than that outlined by the head of a common pin.

The objective of spraying is to reduce the insect population from 100 insects per leaf to one insect per 10 leaves. Expressing the same idea in a different way, the objective is to re-

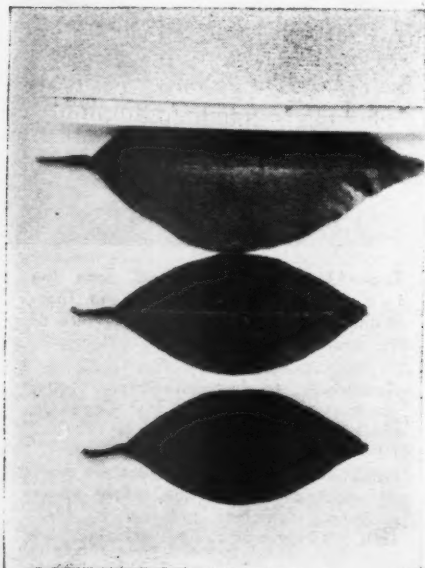
duce the population on 10 leaves from 1000 insects to one insect, or to accomplish a kill of 99.9 per cent. This high per cent kill would not suffice to maintain a status quo in the degree of infestation, much less to bring about an improvement, if it were not for the high natural mortality that occurs every year. With one insect to 10 leaves, laying 2000 eggs, the resultant infestation, except for a high natural mortality, would be 200 insects to the leaf, or twice the infestation of the preceding year.

To effect a covering of spray on the dorsal and ventral surfaces of 100,000 leaves suspended densely on some 5000 or 10,000 twigs and branchlets, with sufficient thoroughness so that but few areas equal to that of the head of a pin will remain uncovered, may seem an objective impossible of accomplishment. Nevertheless, this degree of thoroughness of spray application can be approached sufficiently close so that the insect can be kept under effective control despite its prodigious capacity of reproduction.

Thoroughness in the application of spray is effected by three principal factors: 1) the quantity of spray applied per unit of tree volume, 2) the rate at which the spray is discharged or the time spent in spraying the tree, and 3) the efficiency of the sprayman.

The degree of thoroughness of the application is generally gaged by the degree of infestation, a light application being used for a light infestation and a heavy application for a heavy

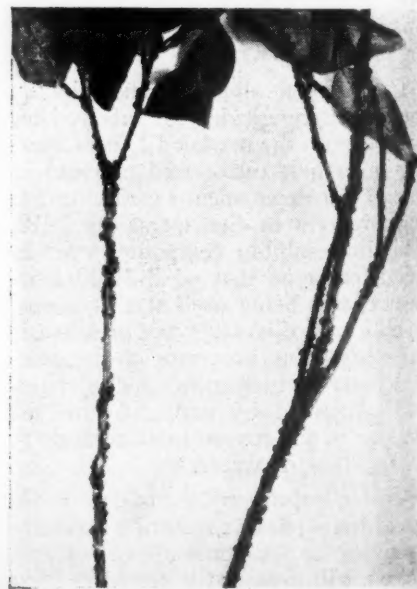
(Continued on page 31)



Left—Scores of young black scales settled mostly along the midrib of orange leaves. The circular object near the center of the middle leaf is the head of a common pin.

Center—Sprayer in operation showing the method of spraying the top portion of trees from the spray tower.

Right—Full grown black scales on the terminal parts of branches of orange trees.





# PEST CONTROL IN FLORIDA CITRUS GROVES

By

A. F. CAMP

Horticulturist in Charge of the Citrus  
Experiment Station  
assisted by

W. L. THOMPSON

Assistant Entomologist  
and

WM. A. KUNTZ

Associate Plant Pathologist

A DISCUSSION of the problems of citrus pest control in Florida within the confines of a short article is almost an impossibility, for the interdependence of control measures is so vital that in many cases we might truly say that "one spray deserves another." Partial control of a number of the insect pests of citrus is effected by the so-called "friendly fungi" which attack them. Bordeaux in its role of fungicide kills the fungi which attack the tree and the fungi which attack the insects with equal facility. Scale are almost certain to increase in numbers following Bordeaux, which not only frees them of their hereditary fungous enemies but also furnishes a residue which greatly aids them in becoming established.

It becomes impossible, then, to recommend a Bordeaux spray for disease control without recommending as a corollary to it an oil spray to control the increased population of scale which will almost inevitably follow.

In addition to this phase of the situation we have many complicating factors that are peculiar to the climatic and crop conditions characteristic of a subtropical region. We are dealing with an evergreen tree without a sharply defined dormant period, and the same may be said of the pests, for during any warm period in the winter insects will be found busily at work.

Under such conditions the development of a uniform spray and dust program is difficult. However, an attempt was made early in 1936 by the Advisory Committee to the Florida Citrus Commission to prepare a uniform pest control program utilizing and correlating all available information. This committee is composed of representatives of the various agricultural research agencies in the State and representatives of the industry and their first effort was the preparation of a Spray and Dust Schedule for 1936.

Emphasis in this program was on the production of better fruit through



An airplane flight over Indian River County in Florida gives sky views of prosperous citrus groves like the one shown above which is located in the Vero Beach area on the east coast.

the elimination of blemishes on the fruit—diseases such as footrot that are not treated by sprays or dusts were omitted. This schedule was revised and re-edited for 1937. This 1937 Better Fruit Program is reproduced in this article and gives in condensed form schedules based on the latest research work. This is not a single schedule but four alternative schedules to fit four different grove conditions. It will be noted, too, that the makeup of the insect control phase of the schedule is varied according to whether Bordeaux has or has not been recommended, the reason for this already having been explained.

The principal insect pests for which control is commonly necessary include the following:

*Purple Scale* and *Florida Red Scale* for both of which oil emulsions are recommended, although lime-sulphur will aid in the control of purple scale if applied at a time when crawlers are numerous. As mentioned above, scale

increase quite rapidly following applications of Bordeaux or other copper sprays and this is apparently due in large measure to the killing off of fungi which attack the scale and also due to the presence of residue on the leaves.

*Whiteflies*, including both the common citrus whitefly and the cloudy winged species. When these become numerous oil sprays are used to kill off the eggs and larvæ. One of the "friendly fungi," an *Aschusonia*, is very active in the control of whiteflies.

*Rust mites* which cause a russetting of the fruit. Sulphur in various forms is used for their control. Other mites which are less common are the red spiders, including the purple mite and the six-spotted mite, both of which do damage at times and must be controlled by properly applied sulphur sprays and even, at times, with oil emulsions.

(Continued on page 32)



# SANITATION

## *Measures in the Apple Orchard*

By G. E. MARSHALL

Purdue University Agricultural Experiment Station

**B**ECAUSE of increasing needs for more complete codling moth control, orchard sanitation has gained prominence among apple growers during the past few years. With the advent of drought conditions, sanitation becomes even more important in the control of codling moth, an insect which thrives in hot, dry weather.

From the beginning of commercial apple production, the most popular method of controlling insects and diseases has been by spraying. Spraying continues to be the most important method of control, but supplementary measures are proving valuable aids in helping to check the progress of insects and diseases.

It is entirely possible that certain single measures may some day control insects and diseases; indeed, there is much promise that this will be the case, but at present growers will often find it necessary in order to effect control to employ, in addition to spraying, several of the supplementary or sanitary measures.

There are seven practices falling in the category of orchard sanitation which are worthy of consideration and possible adoption. They are:

1. Pruning.
2. Screening the packing shed and roadside stand in order to trap the codling moths which emerge therein.
3. Scraping and banding the trees.
4. Plugging knot holes, bad crotches, and split branches which harbor insects and diseases.
5. Thinning off defective fruit and destroying drops.
6. Cultivation.
7. Burning the orchard floor until it is free of all litter and debris which harbor insects and diseases.

Pruning is a practice which results in manifold beneficial effects. If properly done, it cleans out the trees, permitting aeration and the penetration of sunlight, eliminates disease cankers, removes all dead or split limbs



Above—Pruning cuttings and litter being burned in the orchards of the Treedale Farms, Inc., near Pittsburgh, Pa. Photograph courtesy Caterpillar Tractor Co. Top, left—Correct pruning and effective tree scraping as is being done by these workers on the D. B. Johnson Orchards, Mooresville, Ind., are major practices in orchard sanitation operations.

and cracked branches which may harbor diseases and insects, and renders the tree more generally productive instead of limiting the productive area to a shell on the outside of the tree.

The screening of packing houses and roadside stands and the trapping of moths therein to prevent their return to the orchard to lay eggs has proved exceedingly important in the control of the codling moth. An electrocutor light trap hung in the open on each floor of such screened buildings, if turned on at night, will kill the moths as they emerge and seek openings by which to leave the buildings.

One example will serve to illustrate the possible value of such procedure. In 1934 a light trap was hung on each floor of a two-story packing house at the Troth-Burton Orchard Company in southern Indiana. The building was darkened in daytime and the lights were operated day and night.

By careful counts it was estimated that less than two per cent of the moths escaped the light traps. During the season 245,000 codling moth adults were trapped by the lights.

When the "brown canton" screening was removed from the building, approximately 20,000 more moths, which had been held in till they died were found in the folds of this cloth. In all, therefore, 265,000 moths were prevented from returning to the orchard by this operation. In this instance if the cost per 100 for killing the moths were figured, this method would be found to be cheaper than any other orchard practice.

The scraping and banding of trees has proved a valuable aid in the control of codling moth and of some benefit in controlling certain other insects.

The trees should be scraped free of all loose bark during late winter and spring. The scales of bark may be

(Continued on page 38)



# Black Leaf 40

## PROTECTS APPLES

Kills Aphis, Leaf Hopper, Red Bug, Bud Moth and Codling Moth

## PROTECTS PEARS

Kills Psylla, False Tarnished Plant Bug, Thrip and Slug

## PROTECTS PEACHES

Kills Aphis  
Protects Grapes, Kills Leaf Hoppers  
Protects Currants and Gooseberries, Kills Aphis, Currant Worm, Four-lined Leaf Bug

## PROTECTS PLUMS and CHERRIES

Kills Aphis  
Protects plant life from insect damage, and staining by dogs.  
Kills Poultry Lice and Feather Mites

## "BLACK LEAF 40"

### Used with Lime Sulphur and Lead Arsenate Gives Maximum Control of Orchard Pests

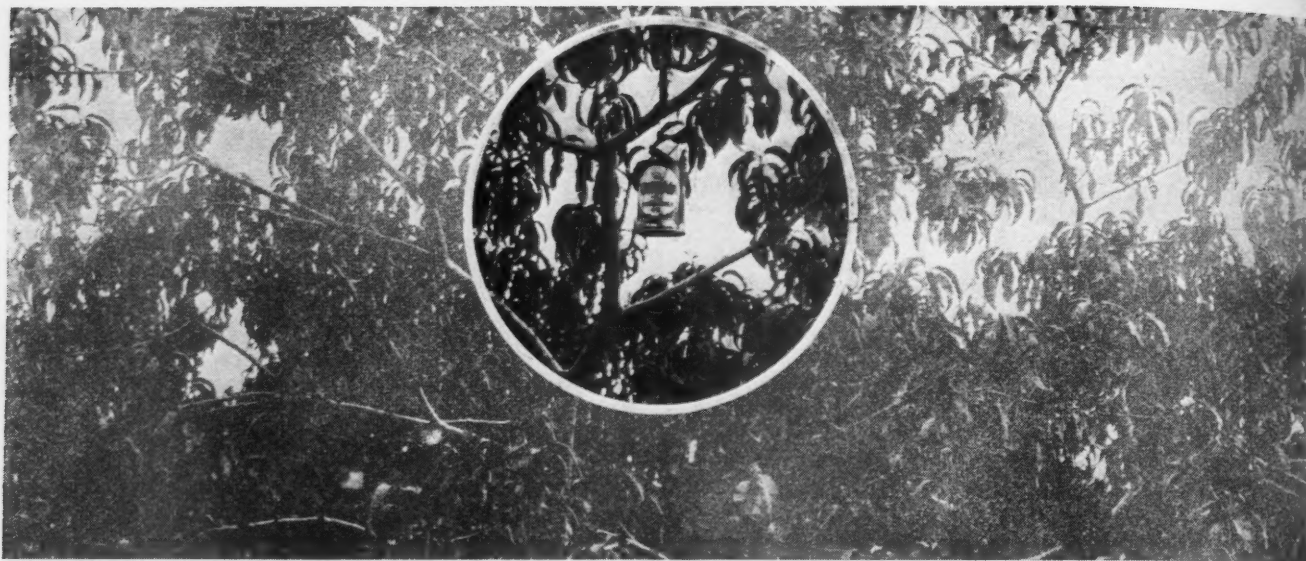
The experience of thousands of fruit growers has proved that one *delayed dormant combination spray* of "Black Leaf 40," Lead Arsenate and Lime Sulphur controls Rosy Aphis, Bud Moth, San Jose Scale, Scab and other destructive insect pests.

"Black Leaf 40" being volatile, "fumes off," killing insects both by contact and by fumes. Added to stomach poison sprays it provides better worm protection.

"Black Leaf 40" is a poison of vegetable origin and will not "burn" men, horses, foliage or crops. It is highly concentrated—a little goes a long way and is easily mixed and applied. "Black Leaf 40" has many other uses too—kills lice on poultry and livestock—protects flowers and vegetables from insects—keeps dogs away from shrubs and evergreens. "Black Leaf 40" is sold by insecticide dealers everywhere.

**TOBACCO BY-PRODUCTS & CHEMICAL CORP., Incorporated**  
**LOUISVILLE, KENTUCKY**

3742



## BAIT TRAPS *for the* ORIENTAL FRUIT MOTH



By M. L. BOBB

Assistant Entomologist

Virginia Agricultural Experiment Station

Illustration shows bait trap suspended in an open space in upper third of peach tree.

**S**PRAYS are not effective in killing the larvae of the Oriental fruit moth because of their peculiar feeding habit, therefore other means of holding the pest in check have been resorted to during the past few years. A considerable amount of work has been done on biological control by liberating parasites, and by capturing the moths in bait traps which contain some attractive agent. This article deals with a bait trap material which has been developed and used in several large peach orchards in the Crozet section with gratifying results during 1935 and 1936. Bait traps are of no practical value in an orchard where the moth population is low or where only slight injury has occurred in past years.

Quart oil cans were collected from service stations, the tops cut out by means of a patented can opener, and two small holes punched near the top on opposite sides. A wire, about 18 to 20 inches long, was inserted in these holes as a means of suspending the trap in the tree. No. 15 wire is best as it is flexible enough to be wrapped around the peach limb and thereby prevent the trap from being blown down during high winds which so frequently occur in the spring.

This type of bait trap is good for but one season unless it is painted with some protective material. Alumi-

num bronze paint has given best results and will prolong the life of the trap two or three years. Rusty cans should not be used for bait traps as the action of the tin on the bait solution affects the mixture and very few moths are captured.

The position in the tree is an important factor in determining the efficiency of the traps. They should be hung from a fairly large limb in the upper third of the tree if possible, and in an open section of the tree where the traps are not sheltered by the foliage and where the moths have access to them. If a rigid limb is not found in the upper third of the tree from which to hang the trap, it is better to suspend it from a lower limb which is rigid in order that the liquid will not be spilled during windy weather. The accompanying illustration shows a bait trap suspended in a desired location in a peach tree.

Some 70-odd bait materials have been tested for their attractiveness to the Oriental fruit moth during the past two years. Of these materials, glutrin at the rate of one part to 20 parts of water plus one cubic centimeter of terpinyl acetate per quart of liquid, or approximately one quart to 250 gallons, has given best results.

The Oriental fruit moth is definitely attracted to an acid solution. Besides being slightly acid, glutrin has several other advantages over the generally used syrup solution, namely, very few large moths and beetles are captured, the mixture never foams, and the traps remain clean and free from rust after long continued use. The acid solution, however, will eat holes in the trap unless it is protected by some material such as has been mentioned. Glutrin is also an emulsifying agent and mixes readily with the terpinyl acetate.

The addition of a small amount of hydrochloric acid increases the attractiveness of the bait material, but the length of time the traps may be used is greatly decreased due to the action of the acid on the tin.

The materials may be mixed in the spray outfit where large acreages of peaches are to be baited. Fill the spray tank three-fourths full of water, start the agitator, and add the correct amount of glutrin. After the glutrin has mixed with the water, which requires only a few minutes, add the desired amount of terpinyl acetate and finish filling the tank with water.

The sprayer may be driven through the orchard or stationed at a central location in the block of peaches. Some growers prefer mixing the materials

(Continued on page 41)



# All Signs Point To A Bad Bug Year!

*Let Standard's Spray Oils guard your trees  
against the attacks of insect pests*

## DENDROL DORMANT SPRAY OIL

**For Controlling Insects**

San Jose scale increased tremendously last summer and from present indications will be a dangerous threat this year. Dormant Spraying with Dendrol is the most effective treatment to use in controlling San Jose scale, Leaf Roller, Red Mite, and other destructive insects. It has high killing power, mixes with any water to form an emulsion through which the oil is dispersed uniformly, insuring dependable control through every part of the orchard. Dendrol is economical to use. It leaves the trees stronger and better able to resist the attack of pests that appear later in the season. Write for complete information concerning Dendrol Dormant Spray Oil and its uses.

## STANDARD APHID SPRAY OIL

**A Powerful Agent for Use against  
Apple Aphids**

Standard Aphid Spray Oil comes to you after two years of actual orchard tests. These tests prove beyond doubt that this new spray oil is a powerful agent for controlling apple aphids. This new product destroys the over wintering eggs and so attacks the infestation at the source. If aphids are a problem in *your* orchard, try a single spraying of Standard Aphid Spray Oil at 4% strength during the spring dormant period before the buds swell. You will find this spray not only controls the aphids but destroys scale, Red Mite, and other important orchard insects. Write us today for more detailed information on Standard Aphid Spray Oil.

## SUPERLA SUMMER SPRAY OIL

**For Controlling Codling Moths**

Reports from all sections of the country indicate that the carry-over of codling moth worms is greater than it has been for many years. This means that unless energetic steps are taken to control the pest with Superla Summer Spray Oil, growers are likely to suffer heavy losses. The high killing power of Superla has been proved;

its effectiveness over old type oils has been clearly demonstrated. There is convincing evidence that Superla's unusual power to resist absorption of oil by plant tissues enables the oil to stay on the surface for a *longer time*. This kills late hatched worms and destroys the eggs. Write us today and learn more about this amazingly efficient spray oil.

**Order your oil today and have it ready when  
the time to spray arrives. Your Dealer or Standard  
Oil agent can supply you.**

PRODUCTS OF

## STANDARD OIL COMPANY

Indiana

910 South Michigan Avenue,

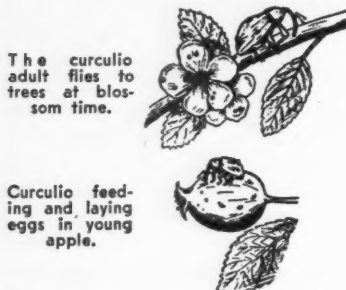
AMERICAN FRUIT GROWER

Chicago, Illinois

## CURCULIO •

The plum curculio, known to many peach growers as the peach worm, is the most serious pest attacking the peach fruit in the South and is of importance between the Rocky Mountains and the Atlantic Seaboard, the Gulf of Mexico and Canada, wherever peaches are grown. Damaging the fruit directly by piercing it for egg laying and gnawing it for feeding, this pest also lays the foundation for easy entrance of the brown-rot fungus through the openings it leaves in the skin of the fruit.

Proper spraying at the right time will control this pest. The usual recommendation is one pound of lead arsenate to 50 gallons of water. In the South the spray should be applied when 75 per cent of the petals have fallen, when the shucks are shedding and a month to six weeks before each variety is due to ripen. Because of residue tolerances, southern growers are advised to consult their experiment stations regarding the necessity of the latter spray.



The plum curculio has only one generation in the North and according to O. I. Snapp of the U. S. D. A. an application of lead arsenate when the shucks are falling and a second application two weeks later will be sufficient for control.

Additional measures are helpful in controlling this pest. These include jarring the tree in the spring to capture adult beetles; collection and destruction of "drops" in the spring; disking beneath trees during pupation season to destroy the insects during their transformation; and a general sanitation program in the orchard during the winter.

## LEAF-ROLLERS •

Another troublesome pest is the active, naked caterpillar known as the leaf-roller which rolls the leaves of apple and other fruits and lives in this shelter, feeding on the leaves. It overwinters in the egg stage on the bark.

The eggs are killed by dormant oil

# INSECT CLOSE-UPS

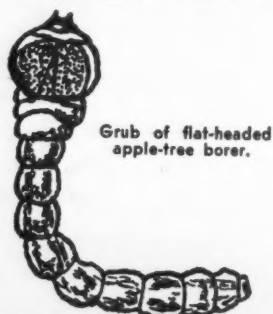
sprays. Highly concentrated oil sprays are needed and manufacturers' directions should be followed when using oil emulsions. The spray should be at least six per cent to be effective.

## APPLE-BORER •

Shallow irregular mines or burrows just under the bark of the trunk of main branches indicate the presence of the flat-headed apple-tree borer. The burrows are usually on the sunny side of the tree, but may encircle it. Nearly all trees suffer from the attacks of this pest. Grubs, found in the burrows during the winter and early spring, are about one and one-fourth inches in length, yellowish in color, with a broad, flat enlargement of a body segment just in back of the head.

Once a tree is infected, the only remedy is to remove the grubs by digging with a sharp-pointed knife. This is done in late summer or early fall. Trees should be kept in healthy condition, as weak trees are more liable to become infested with the borers. When cutting out the borers care should be taken to cut with the grain of the wood and not against it.

To protect young trees a board or stake is placed so it will shade the south side of the trees for the first two or three years. Wounds caused by the cutting out of the grubs are covered with a good wound dressing.

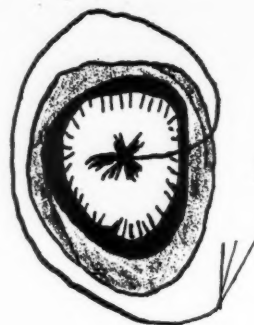


## SAN JOSE SCALE •

Believing that the severe low temperatures of last winter would kill off scale insects, many growers failed to apply dormant sprays. However, in many orchards the population of this insect has attained such numbers that dormant spraying will be an absolute necessity this year.

An example of the population build-up is contained in the findings of Dr. S. C. Chandler, Illinois Agricultural Experiment Station entomologist stationed at Carbondale, who states, "Although scale was killed to a three per cent population last winter, the live population had built back to 27.5 per cent on peaches and 16 per cent on apples by September."

In a survey of Calhoun County (Ill.) orchards in late November Dr. C. R. Cleveland, Chicago, found that of the scales on the suckers and young growth, 65.1 per cent were alive.



Underside of San Jose scale

These examples serve to illustrate the fallacy of omitting control measures even in years when it appears that the insects may be killed by natural causes.

The San Jose scale shown in the accompanying illustration is effectively controlled by dormant spraying with miscible lubricating oil. New York Agricultural Experiment Station workers advise a spray containing three per cent oil.

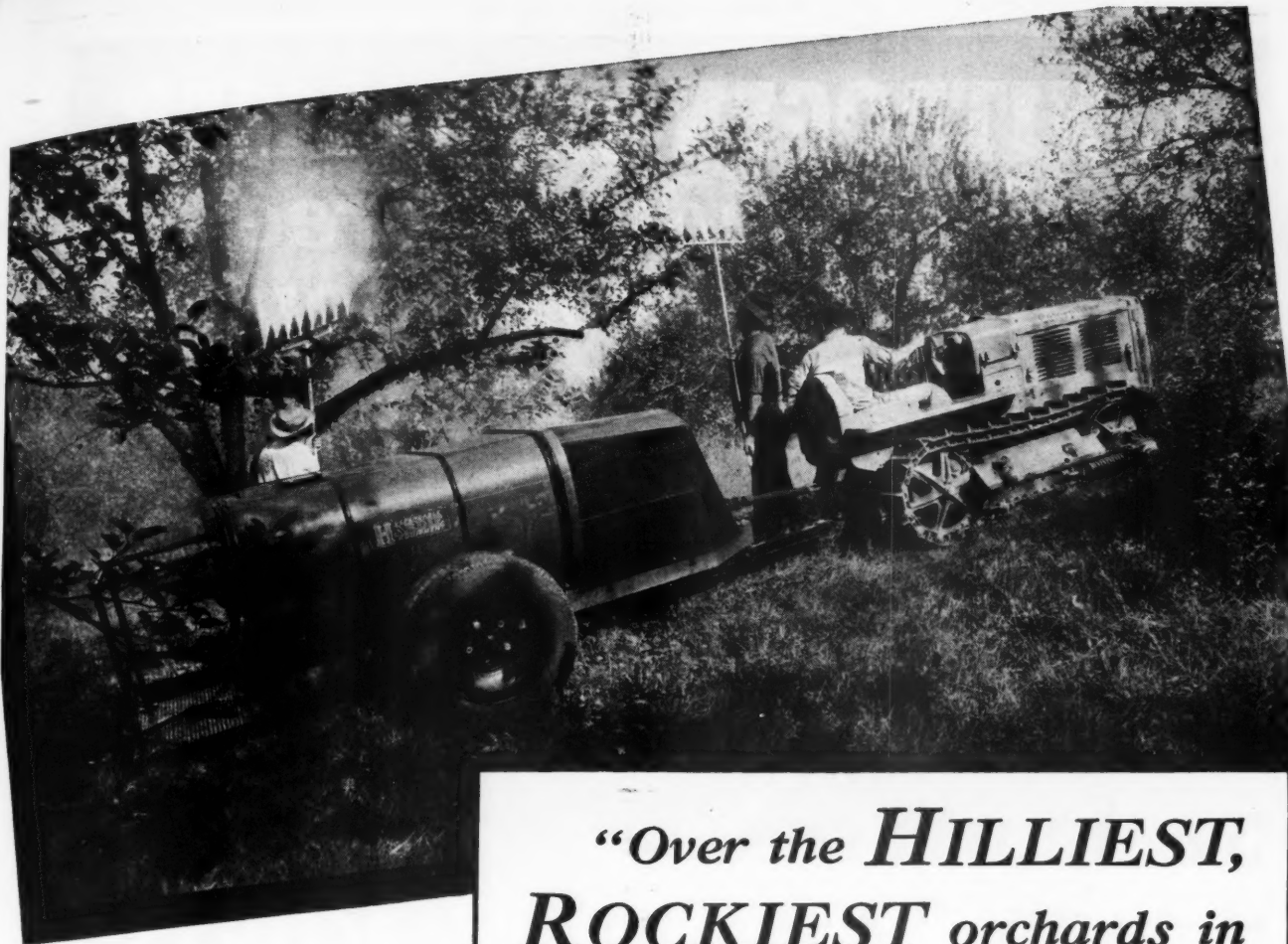
That it is necessary to completely control this pest in the dormant period is substantiated by the statement of leading entomologists that each female gives birth to from 100 to 200 young.

## LEAFHOPPER •

None of the grape insects is more generally present year after year than the grape leafhopper. When attacked the grape leaves become a light greenish-yellow, the vines lack vigor and the entire plant has a run-down appearance. As this condition is

(Continued on page 40)





*"Over the **HILLIEST**,  
**ROCKIEST** orchards in  
Conn., our Twenty-Two per-  
forms like a 'mountain goat'"*

*—writes Hale Orchards, Inc., Seymour, Conn.*

"OUR orchards are located on probably the hilliest and rockiest land in the state," writes P. J. Musante, owner of Hale Orchards, Inc., Seymour, Connecticut. "But our 'Caterpillar' Twenty-Two Tractor performs like a mountain goat."

"We use a 400-gallon power take-off sprayer, equipped with 35-gallon-per-minute pump. Our Twenty-Two handles this sprayer at second speed, maintaining a spray pressure of 600 pounds—doing this work on only 2 gallons of fuel per hour."

"Also, the 'Caterpillar' Twenty-Two easily pulls a 7-foot double-action plowing disk harrow over our roughest land. In more than a year's operation, this tractor has needed no repairs. Due to its wonderful service, 'Caterpillar' will receive first consideration when we need additional equipment."

Whether your orchard is level or hilly—rough or smooth—you can do your work on time and to your standards with a "Caterpillar" track-type Tractor. Sure traction to conquer adverse footing conditions—ample power and balance to do thorough work on steep grades—rugged stamina of heat-treated alloy steels for dependable performance.

Smoothly fendered "streamlined" Orchard Models—with a choice of modern seat mountings—are offered in the Twenty-Two, Diesel RD4 and new Thirty. Let this coupon bring you further information.

# CATERPILLAR

REG. U.S. PAT. OFF.



**WORLD'S LARGEST MANUFACTURER OF DIESEL  
ENGINES AND TRACK-TYPE TRACTORS**

## TRACTOR CO., PEORIA, ILL.

CATERPILLAR TRACTOR COMPANY, Dept. A-2, Peoria, Illinois

Gentlemen: I operate \_\_\_\_\_ acres of orchard.

My present power is \_\_\_\_\_

Please send me information on:

☐ Orchard Model Twenty-Two    ☐ Orchard Model Diesel RD4  
☐ Orchard Model Thirty

Name \_\_\_\_\_

Address \_\_\_\_\_

# *The* **NITROGEN FERTILIZER** *that Feeds the Tree and Limes the Soil*



**CORRECTS  
ACIDITY**  
caused by  
sulphur sprays and  
decaying organic  
matter

**Ask for Leaflet F-142**

..... which tells you more about this  
**NON - LEACHING, HIGH - NITROGEN,  
HIGH-LIME, GRANULAR FERTILIZER,**  
and how to use it in growing ....  
**bigger yields of better-quality fruit.**

**AMERICAN CYANAMID COMPANY**

*Producers of Granular Fertilizers*

'Aero' Cyanamid—'Ammo-Phos'—32% 'Aero' Super Phosphate  
30 Rockefeller Plaza New York, N. Y.

\*Reg. U. S. Pat. Off. and Principal Foreign Countries

***Feeds the Tree Evenly Throughout Growing Season***





A PAGE CONDUCTED IN THE  
INTERESTS OF THE AMERICAN  
POMOLOGICAL SOCIETY

## HIGHLIGHTS OF ANNUAL REPORT

FIRST of all, members of the American Pomological Society, the annual report of the 52nd convention held at Roanoke, Va., will be ready for distribution much earlier than in former years. In fact, over 200 pages of page proof are already in the hands of your secretary, which means that this excellent report will be completed by the first of March or earlier.

### Memberships

But we cannot send the report unless you have renewed your membership for the year 1937. The dues remain at \$1.25, and in addition to the large report you receive a year's subscription to AMERICAN FRUIT GROWER. Send your check or money order to Secretary H. L. Lantz, Ames, Iowa, and you will get your copy of the Report as soon as it comes from the press.

Some items gleaned from the Proceedings of the Virginia convention will give you some idea of the fine quality of the report. The first day of the sessions President B. S. Pickett said, "The American Pomological Society, from the time of its organization, among its other aims, has particularly concerned itself with every sort of thing connected with varieties of fruits. In the beginning, variety problems and names and adaptations were principal subjects of its discussions. Today, if you want to start a lively and interesting discussion in any pomological meeting, bring up the question of a new variety that might be useful, and you will find some who will advocate changing to the new variety and you will find a number who will advocate sticking to the old variety, and there will develop a most interesting argument."

Following this Dr. H. L. Price stated that, "There is no one ideal apple or peach for all seasons or markets but whatever the season or market may be, a variety to be successful must possess certain characteristics. Very few of our apple or peach varieties possess all of these characters in a marked degree. As we learn more about varieties the number available for commercial planting with any promise of success becomes less and less. It is a long cry from the huge list of apples published by the Downings to our modern catalog lists of market sorts. Many varieties once urged for commercial plantings have disappeared from our fruit catalogs and others are on their way to oblivion. This is as it should be and we may expect some of our present best market sorts to go the same route when new and better varieties make their appearance."

Dr. Price listed the characteristics which make an apple worth cultivation for commercial purpose and added a discussion relative to the merits and faults of the varieties York, Stayman Winesap, Rome Beauty, Grimes Golden, Starking and other red forms of the Delicious, Golden Delicious, Turley, Lowry, and Albemarle Pippin.

Dean Price added, "I have tried to paint the variety situation as it exists today. The great tree fruit industry is largely built on these varieties. Although they have brought success to the fruit grower in the past they may not be adequate to our market demands of the future. Although well known for the most part to our consuming public we must as fruit growers remember that the public taste is very fickle. In the future they will demand better and better fruit. A few of our old second rate varieties of high quality may be brought to the front again on our commercial list but I look for progress in the appearance of new and better varieties."

"If the magnificent fruit flora we now have has come about largely through chance what may we not expect from a systematic and wholesale breeding program?"

"Second, there should be a concerted effort on the part of horticulturists to breed not simply new but better varieties. Not experiments to discover the laws of inheritance but a program that will apply these laws to the developing of a more nearly ideal fruit flora."

"There is no reason why ideal qualities of vigor, hardiness, prolificacy, annual bearing, color, form, size, and quality cannot be combined in one fruit. Many years ago that grand old horticulturist, Liberty Hyde Bailey, in discussing the progress made in agriculture due to better management and better practice, pointed out that the law of diminishing returns had begun to operate and predicted that future progress would be made not so much by improved methods as by the discovery of individual animals and plants that would with the same treatment yield the grower greater returns. Gentlemen, I think the future progress of fruit growing will be based largely on the production or discovery of such varieties."

"I would like to see a revival of interest on the part of this society in the variety question. We should not only be interested in eliminating the hundreds of worthless sorts from our fruit lists and our trade catalogs but we should concentrate our interests on the discovery of better varieties if the fruit industry is to continue to improve."

Dr. H. P. Gould, senior pomologist, U.S.D.A., was described by President Pickett as "the one to whom we look in the U.S.D.A. for information on varieties more

than anyone else." Dr. Gould very ably discussed the subject of Present Trends of the Fruit Industry, relating how soil management practices, fertilizers, pruning, thinning and other orchard operations had been modified through the years. He presented some census figures relative to population and fruit production which are worth careful study.

The statistics given by Dr. Gould relative to apple production are extremely interesting.

### No. of Apple Trees—Different Census Years:

Year	Average Production per tree		
	Bearing Age Millions	Non-Bearing Age Millions	Av. Prod. per tree Bushels
1910	151.3	65.8	1.02
1920	115.3	36.2	1.35
1925	103.7	34.3	1.76
1930	88.8	27.5	1.76
1935	82.5	17.5	1.64

Average production in different five-year periods is given in the next table:

Period	Commercial Crop (bushels)	Total Crop (bushels)
1911-15		215,592,000
1916-20	80,337,000	172,208,000
1921-25	89,438,000	168,517,000
1926-30	97,967,000	171,193,000
1931-35	86,359,000	155,074,000

"These two tables are the basis for several significant deductions," said Dr. Gould.

"A heavy and constant decrease in the number of bearing trees during the period 1910-35 has taken place, the number in 1935 being not greatly more than half the number in 1910.

"The number of trees of non-bearing age in 1935 is but little more than 25 per cent of the number in 1910.

"Well, with the commercial crop of apples remaining more or less constant, and the population increasing at the rate of 15,000,000 or more every 10 years, why aren't the apple growers feeling the effects of the increasing consumption?"

"It is difficult many times to connect cause and effect. But here are some facts, which may, or may not, have bearing in the matter.

### Average Production of Oranges in Different Periods.

Period	Production
1915-20	20,868,000 boxes
1931-35	53,337,000 boxes

### Average Production of Grapefruit in Different Periods.

Period	Production
1921-25	7,722,000 boxes
1931-35	16,768,000 boxes

"The November 1 estimate for the 1936-37 grapefruit crop is in excess of 27,500,000 boxes. It is easy to see on going no farther back than 1915 that orange production has increased 155 per cent and grapefruit production 118 per cent since 1921."

There isn't space here to enumerate all of the valuable information contained in the two papers referred to above, but these few paragraphs will permit you to see what a storehouse of information there is in the Proceedings of the A.P.S. which will soon be ready for distribution.

*H. L. Lantz*  
SECRETARY

Secretaries and other executive officers of state horticultural societies in the apple districts, apple institutes, and allied industries are urgently referred to the communication sent by R. G. Phillips, secretary of the International Apple Association, under date of September 30, 1936, regarding action to promote research and publicity in a campaign to increase the use of apples, and are asked to communicate the sentiments of their organizations promptly to Mr. Phillips. A number of societies have already acted but others have either missed the significance of the communication or have still to take action. There is no other matter now pending in the apple industry as significant as this. It is important that action be taken at once.

**NOW**

**A TRULY BASIC CUPPER SULFATE** *that is Revolutionizing Bordeaux Spraying*

**THE SHERWIN-WILLIAMS CO.**  
WORLD'S LARGEST MANUFACTURERS OF  
INSECTICIDES AND FUNGICIDES

# A SAFE AND EFFECTIVE

CONTROL OF LATE SCAB, CHERRY LEAF SPOT, APPLE BLOTCH

A new—a better—a safer, more convenient substitute for Bordeaux Mixture is now offered by Sherwin-Williams in BASI-COP. This is a truly basic copper sulfate which can be used with greater safety on apples. BASI-COP will control leaf spot of sour cherries without causing yellowing and premature dropping of foliage, and does not reduce the size of the cherries. Get the facts by writing at once for the above folder.

BOTH of THE F  
ARE NOW S

Send Th  
At once

LET S-W VE YO  
SPRAYING ROBL

The vast resources  
and experimental  
without charge. Our Service D  
will be glad to m  
specific information  
spraying problem.

WRITE TODAY

Sherwin-Williams b  
problems and their p  
asking. Do not hesit  
for our advice. Such  
charge. Write today

**THE SHERWIN-WILLIAMS**  
Insect  
101 Prospect Ave

101 Prospect Ave

# SHERWIN-WILLIAMS SPRAY AND DUST MATERIALS



THE FOLDERS  
ON SAVERS

d Them  
At nce!

S-W VE YOUR  
YIN ROBLEMS

ources Williams laboratories  
ental are at your service  
ge, O Service Department  
to m ble literature giving  
mation of your every  
lem.

ODAY OUT DELAY

ms-b folders on spraying  
their on are FREE for the  
t hesi your problem and ask  
. Such mals no obligation or  
e today delay.

ERWILLIAMS Co.

nssect ment  
ct A veland, Ohio.

here's  
real  
**NEWS!**  
**WETTAFLE**

*A scab-controlling, non-russet, non-injurious-to-foilage spray combination*

**ASSURES FINE COLOR-FINE FINISH**

- Does Away with the use of Straight-Wettable Sulfur
- Gives a Spray Combination that Spreads and Sticks
- Assures Scab Control, No Russet and No Injury to Foliage
- ... AND A CROP OF A-GRADE APPLES

**AT ONE THIRD THE USUAL COST**

**THE SHERWIN-WILLIAMS Co.**  
101 PROSPECT AVENUE N.W.  
CLEVELAND, OHIO



**A NEW  
ECONOMICAL**

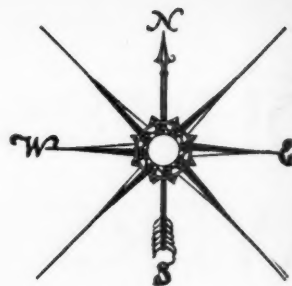
**WAY TO MAKE SULFUR WETTABLE**

Announcement of this Sherwin-Williams Dry Lime Sulfur-325 Mesh Sulfur combination is such real news that we urge you as a practical apple grower to write at once for the above folder which tells you how this combination mixes, sprays and sticks, to reduce your summer scab control spray bill ONE-THIRD by actual comparison of costs with a combination of liquid lime sulfur and expensive wettable sulfurs. Get the facts by writing at once for the above folder.

**SHERWIN-WILLIAMS**  
**SPRAY AND DUST MATERIALS**

# STATE NEWS

FROM NEAR AND FAR



**DELAWARE**—Celebrating its Golden Anniversary, growers attending the Peninsula Horticultural Society annual meeting at Hurlock,



Md., learned from Senator O. R. Higgins (Hurlock, Md.), president, that the society was organized October 21, 1886, at Dover, Del., with a membership of 73 which in the ensuing years has grown to approximately 900.

In his discussion at the meeting on spray injury on apples, Dr. F. J. Schneiderhan of West Virginia Experiment Station pointed out that he found trees sprayed with Bordeaux at a pressure of 600 pounds were severely rusted, while on other trees of apparently equal vigor the same material applied at 130 pounds caused no injury.

This season's experiments indicate the two most promising substitutes for Bordeaux are Z-O and Coposil.

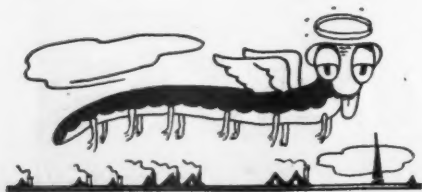
The use of various insecticides in the control of codling moth has shown variable results, depending upon the section of the country where used, stated Dr. B. A. Porter, senior entomologist of U. S. Bureau of Entomology. He placed emphasis upon supplementary control measures in conjunction with a thorough spray schedule.

In 1936 codling moth experiments, all combinations of lead arsenate, even at the reduced rate of three pounds per 100 gallons, were more effective than any insecticides investigated, regardless of concentration, according to Dr. L. A. Stearns, entomologist of Delaware Experiment Station.

C. D. Barton, vice-president, New Jersey Peach Council, Inc., recommended N. J. 94 for planting in preference to Belle of Georgia. N. J. 97, Mr. Barton stated, is a large white-fleshed freestone ripening at the Carman season, while White Hale is a large, firm, white-fleshed freestone of good quality ripening at the same season as J. H. Hale.

While some reduction of yield was experienced when thinning Transparents, far higher marketable qualities of apples resulted, Dr. F. S. Lagasse of Delaware Experiment Station reported. In the case of peaches, Golden Jubilee showed an increased yield of marketable peaches amounting to approximately 30 per cent where thinned.

Nitrogen in orchard fertilization continues to be the most important element, with a decided trend on the peninsula towards fall application.—J. F. ADAMS, Sec'y, Newark, Del.



**WASHINGTON**—Frightening the codling moth to death with Triethanolamine oleat and mineral oil (Dynamite) was suggested by

James Marshall to the 600 growers attending the annual hort society meet at Yakima. Another tasty dish is Phenothiazine, discussed by E. J. Newcomer of the Bureau of Plant Industry as a substitute for lead arsenate.

Believing the current discrepancy of 46.3 pounds of apples per capita in our yearly diet can be effectively overcome, N. Mogge and O. T. Clawson pointed out the fundamental role of growers—production of quality apples and advertising of the fruit.

The health value of apples should be stressed in advertising of this fruit, in the opinion of Dr. E. J. Bittner (Yakima), who has obtained outstanding results in curing dysentery in children with an apple diet.

Alpha No. 1, a low growing sweet clover, is a satisfactory cover crop, according to H. P. Singleton of the Irrigation Branch Experiment Station at Prosser. Damage to the stand of cover crops in orchards by disking outweighed profits gained therefrom.

C. E. Schuster, Bureau of Plant Industry, asserted many soils appearing apparently deep are actually shallow due to various physical factors limiting root penetration.

Individual tree records prove of value in eliminating unprofitable trees, stated Successful Orchardist Ralph Sundquist.

C. L. Robinson's reports indicated that nitrogen is the principal fertilizer.

Roy Smith of Chelan was given the duties of president for 1937, while C. L. Robinson of Yakima was elected first vice-president, Roy Larson of Okanogan second vice-president.—JOHN C. SNYDER, Sec'y, Pullman.



**ILLINOIS**—New small fruits which have had good records at Urbana during the last few seasons are Naples and Dundee black raspberries and a new autumn fruiting red raspberry Indian Summer from Geneva (N.Y.) station, according to Dr. A. S. Colby of the University of Illinois who addressed the Central Illinois Hort Society meet at Peoria.

Sodus purple raspberry, another New York variety, as well as Potomac from the U.S.D.A., are meeting with some favor among growers. Fredonia grape from Geneva has, Dr. Colby believes, been sufficiently tested to be recommended as an early variety of good quality.

The value of these varieties in the State can be determined only after several years' trial, in the opinion of Dr. Colby.

Soil conditions may be found at various places in the State sufficiently favorable for the blueberry, one of the most valuable small fruits, stated Dr. Colby. Several varieties of promise are being tested at the station.

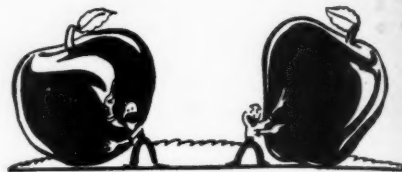
The 1937 apple crop outlook is very favorable, in the opinion of V. W. Kelly, extension specialist of the university.

Precooling and fast freezing of fruits and vegetables is commanding more attention each year. As yet, however, fast freezing is too expensive due to the extremely low temperature necessary to quick freeze, according to F. C. Gaylord of Purdue University.

AMERICAN FRUIT GROWER

Though less costly, it remains to be seen how successful the freezing of fruits at zero may be.

The premium list of cash prizes made a "hit."—LEO J. HAGEMANN, Sec'y, Peoria.



**NEW JERSEY**—Too often we become possessed with the notion that apples from another district are in direct competition with ours. Truth of the matter is that we compete in the public market with products such as wool, beef, etc.

Realizing this, the hort society in 60th annual convention at Atlantic City decided upon an intensive national campaign to be based upon proven food values of N. J. apples. "By trademarking 'Garden State Peaches' last year," Byron T. Roberts, retiring president of the society, stated, "and introducing the State Agricultural College-bred varieties, we increased sales. We must do the same for apples."

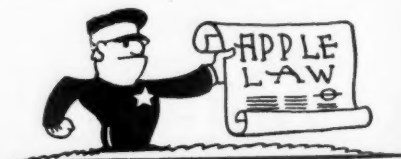
Ralph B. Starkey of Mullica Hill succeeds Mr. Roberts as president of the society. Mr. Roberts and Leo Brandenburg of Mullica Hill were named to the executive committee. Lawrence B. Smith of South River was elected vice-president and Arthur J. Farley of New Brunswick continues as secretary-treasurer. Tunis Denise of Freehold was selected to represent the society for the next two years at the State agricultural convention.

Wise growers will follow Dr. T. J. Headlee's (Agricultural Experiment Station) advice to destroy the millions of overwintering aphid eggs now present in Jersey orchards by spraying them with a tar-oil wash.

The ability of the female apple aphids or plant lice to produce successive generations of their own sex in the absence of males has made them a major orchard pest. Best point of attacking the aphids' life cycle is in the overwintering egg stage.

Federal payments to 4,000 Jersey farmers of \$300,000 against original offer of \$2,000,000 looks as if some of us were Blotto when it comes to working with the National Agricultural Conservation Program. As a result only \$600,000, according to W. H. Allen, executive officer for N.A.C.P., will be available in 1937 to Jersey fruit and vegetable growers.

**VERMONT**—Highlight of the winter meet of the hort society, held in conjunction with the Union Agricultural meeting in Burlington, was presentation of a new apple-grading law by



a committee composed of S. E. Allen of Fair Haven, Julian Dimock of East Corinth, George Milne of Barre, and H. A. Dwinell, director

(Continued on page 37.)

FEBRUARY, 1937

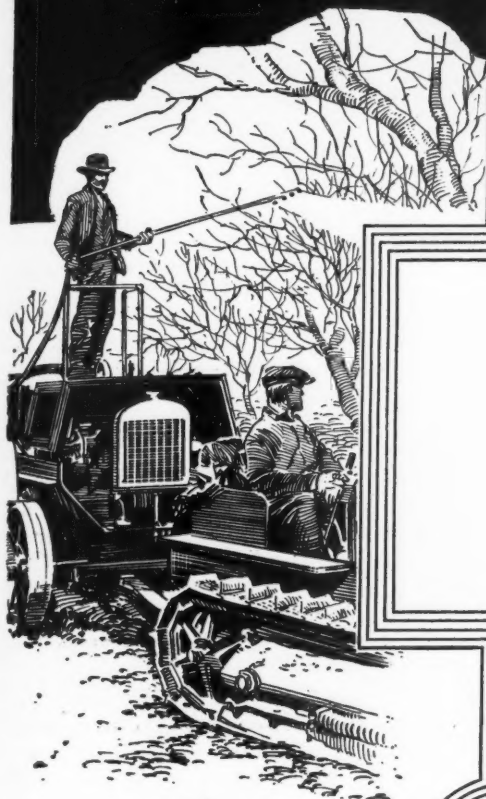


# ORCHARD BRAND

REG. U.S. PAT. OFF.

# Quality

...a sound basis for spraying  
for profitable results



Other

**ORCHARD BRAND**  
Sprays and Dusts for  
Every Grower's Need

"Astringent" Arsenate of Lead  
Standard Arsenate of Lead

Calcium Arsenate

Arsenite of Zinc

Zintox (Basic Zinc Arsenate)

Paris Green

Bordeaux Mixture

"Dritomic" Sulphur

"Apple Dritomic" Sulphur

Paradichlorobenzene

Nicotine Sulphate  
(40% Nicotine)

X-13 (Pyrethrum Extract)

Fungi (Sulphur) Dust

90/10, 85/15 and other  
Sulphur-Arsenical Dusts

Bordeaux-Arsenical Dust

Copper Lime Dusts

Veget-Aid—a Rotenone Dust

**Y**OUR dormant spraying investment in labor and materials will be profitable in direct proportion to the quality of your materials and the thoroughness with which application is made. If the experience of the many thousands of growers who use them year after year is any guide, you choose right for **ECONOMY** and **PROFITABLE RESULTS** when using **ORCHARD BRAND**

## LIME SULPHUR SOLUTION and OIL EMULSION "83"

(83% NEUTRAL BASE OIL)

The former, for general orchard and packing house clean up and sanitation, has a multitude of friends who swear by its uniformity and the effectiveness of its high concentration. Scientific chemical control in manufacture gives it a 29% calcium polysulphide content. Therein lies its consistent superiority to the non-scientific home-boiled product.

Shipment to strategic centers in the Company's own tank cars, as well as in drums, makes for economical purchase by growers in all principal fruit districts. Truly an **ECONOMY** product for dormant spraying.

The dry-packed form is also available where the user prefers it.

Get your copy of the  
1937  
"Cash Crops"

REG. U.S. PAT. OFF.

**GENERAL CHEMICAL COMPANY...40 Rector St., New York**

also: ATLANTA, BALTIMORE, BOSTON, BUFFALO, CHARLOTTE, CHICAGO, CLEVELAND, DENVER, HOUSTON, KANSAS CITY, LOS ANGELES, MINNEAPOLIS, MONTEZUMA (GA.) PHILADELPHIA, PITTSBURGH, PROVIDENCE, SAN FRANCISCO, ST. LOUIS, WENATCHEE, YAKIMA

Please send me a copy of the new edition of "Cash Crops."

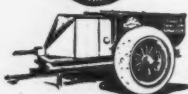
NAME and  
ADDRESS

1937...A STILL BIGGER YEAR FOR "ASTRINGENT" LEAD!



## OSPRAIMO SPRAYERS

Give You  
at Lowest Cost  
What You Want Most—  
Dependable Pressure  
Uniformly  
Maintained



Uniform High Pressure Guaranteed

If you raise Potatoes or Truck Crops or have an Orchard, you should send for our Catalog. It describes a complete line of Traction and Power Sprayers made by specialists, and embodying many exclusive features. There are Tractor and Truck-operated Models; also an up-to-the-minute Trailer Model. A modern Sprayer will quickly pay for itself in bigger crops of better quality, and in time and labor saved.

Write today for our FREE Catalog. Keep posted on recent improvements in Sprayer design.

Field Force Pump Co.  
Dept. A, Elmira, N. Y.  
Makers of Sprayers for  
More Than 55 Years



**NICOTINE**  
SULPHATE 40%  
NICOTINE PRODUCTION CORPORATION  
CLARKSVILLE, TENNESSEE

## INCREASED YIELDS

AS REPORTED BY EXPERIMENTAL STATIONS OF MAINE, NEW YORK, OHIO, MICHIGAN, AND VIRGINIA

BY USING

## OHIO SUPERSPRAY

Hl-Magnesium Lime  
(300 Mesh)

## FOR SPRAYING & DUSTING

Write for Spray Calendar and Further Information

**OHIO HYDRATE & SUPPLY CO.**  
WOODVILLE, OHIO

MGFRS. OF LIME & LIMESTONE PRODUCTS  
FOR AGRICULTURAL, BUILDING &  
INDUSTRIAL USES

# CODLING MOTH FORECAST FOR 1937

By WILLIAM H. ZIPP

Field Editor

**W**HAT are the potentialities for codling moth in 1937? From Puget Sound to the Atlantic Seaboard trained scientists have for months been searching for the answer to this question. Present reports tend to indicate an attack of greater proportions than that of last year if future weather is favorable.

Since the weather is unpredictable, it behooves every fruit grower to prepare for the possible onslaught of this pest. The current outlook is presented by the following views of sectional authorities.

Dr. J. C. Snyder, extension horticulturist for Washington, says: "The carry-over of codling moth does not appear to be particularly large. It, of course, is considerably larger than it was five or more years ago, but probably no more so than last year. It, however, will be necessary for growers to plan a strong control program in order to combat codling moth in this section next year."

"For the whole Appalachian region," says Dr. W. S. Hough, entomologist of the Winchester Field Laboratory of the Virginia Agricultural Experiment Station, "the codling moth carry-over is three to four times as great as last year."

Nor has the apple and pear growing country of California escaped the activities of the codling moth for, according to Arthur D. Borden, assistant entomologist of the California Agricultural Experiment Station, "The number of over-wintering codling moth larvae in the apple and pear growing districts of California will be much greater this winter than for any previously observed season. Especially is this true of the orchards in the near coastal regions. Moth populations will show increases the coming season and complete spray programs with auxiliary means of control, such as thinning, banding and orchard sanitation, are being recommended to our growers."

Looking ahead to June and July, S. W. Harman, associate in research of the Division of Entomology, New York Agricultural Experiment Station, advises:

"Exceptionally favorable conditions for codling moth development during the past season were responsible for a very large carry-over of worms. Growers should be prepared to strike hard at the first brood next June and July. Extremely cold weather, in the neighborhood of 30 degrees below zero, would tend to reduce the over-wintering population, but usually the winter mortality is not important. Weather con-

ditions during the month of June are about the best indication of what may be expected from the codling moth during the summer. A cool, wet June would be very helpful in holding the worm injury to a comparatively low figure, while the more favorable hot, dry weather might easily be the cause of a codling moth year."

A record has been set for carry-over population in Illinois, says W. P. Flint, chief entomologist of the Illinois Agricultural Experiment Station, regarding the Illinois codling moth carry-over. "I would say that the fall survey of conditions conducted by Mr. Chandler in southern Illinois and work in the west central part of the State indicates that the carry-over will be at least three times as heavy as last year. In fact, it is the largest carry-over of which we have any record. Rather complete records have been kept for the past five years. Of course, it is altogether too early to state what the survival may be and by spring the situation may not look nearly so bad."

On the Michigan situation, Ray Hutson, head of the Department of Entomology of Michigan State College, says: "The extremely favorable mid-summer weather during the season of 1936 resulted in a large build-up of codling moth. As a consequence the number of codling moth larvae going into hibernation throughout the Michigan fruit belt is the highest since 1933. The population is sufficient to account for a great amount of damage next summer if conditions are at all favorable for the codling moth at that time."

Mirrored in these statements by leading sectional authorities is caution for the fruit grower so that every available operation and known practice be recruited against the codling moth and its potential activities for 1937.

There was a distinct lack of cooking apples in the Hood River, Ore., section last year due to the general high quality of fruit and the greater demand for top-quality canning apples. Growers in this section received as much for cooking apples as for lower grades of the commercial pack in previous years.

Another type of revenue from a fruit plant was realized by Dr. H. L. Voorhies of California when he recently sold a large black walnut tree to an eastern furniture manufacturer for a reported price of \$1,250.



## ARSENATE OF LEAD SUBSTITUTES?

(Continued from page 9)

ing to the fact that we must go slow in adopting new materials. Up to this time nothing usable has been found superior to lead arsenate. Most of the materials thus far tested have proved inferior; a few are worthy of further study. The growers of the nation have millions and millions of dollars at stake. Eventually a suitable, compatible substitute will be found.

At the moment, with existing low tolerances it does not seem to be a matter of life and death whether or not growers should be forced into an immediate change in their spray usage. Science has had a hard time proving (if there exists real proof) that sprays employed on apples, even in their worst usage, have proved deleterious to health. In line with good practice, cleaning is a wholesome, desirable procedure in which a majority of those interested in the apple industry concur. It seems reasonable that tolerance be employed in the matter of residue which expresses the real meaning of the term. The record of the apple grower is good insofar as his relation to public health is concerned, loose talk on the part of a few individuals notwithstanding. Sprayed apples have been consumed in vast quantities during the past 30 or more years and our span of life is increasing. If the public desires apples in their diet, it will be necessary to spray the fruit in order to insure production.

We tolerate modern transportation, games, even sugar, molasses and candy; the former very deadly to a vast percentage of our population—the latter to innumerable uninformed diabetics. In the face of extremely limited and inconclusive evidence with even unwashed apples, why, therefore, should not the apple grower be granted a reasonable tolerance in the form of spray usage and time to work out his problem in a safe and sane way? We are not yet ready—nor will we be for some time—to recommend generally suitable substitutes for lead arsenate.

## Grading Oranges by X-ray

Grading of oranges by use of the X-ray seems to be the next step for citrus packers. California Fruit Growers Exchange recently tested a machine with which the operator is able to see the center of the fruit as it passes on a belt between two flouroscopes. A total of 22,500 oranges an hour may be inspected in this manner and imperfect fruit is discarded by the touch of a lever.

FEBRUARY, 1937

# YOU GET ALL 3 IN THE OLIVER ORCHARD "70"



### JUST DRIVE THE OLIVER ORCHARD "70"—STEP ON THE SELF-STARTER!

Then, ride at ease in the spring-and-hammock seat. Every control is right at your finger tips. The "70" handles like a modern automobile.

The Oliver Orchard "70" is compact. The turning radius is short. It is full streamlined and low in height. It works close in under trees and is free of all projections, shielded and guarded so that there is no chance for damaging the trees.

The Oliver "70" 6-cylinder engine gets more power from the fuel.

The "70" HC, with its high compression head and special manifold, gets maximum power and fuel economy from regular gasoline.

The "70" KD, with entirely different head and manifold, gets maximum power and fuel economy from kerosene or No. 1 distillate.

You pick the fuel you want to use, the "70" engine to use it most economically,

and you have a tractor with smooth, quiet, 6-cylinder power and real driver comfort.

The flow of power to the wheels is steadier. There is less lost motion, less jerking and, consequently, more efficient power and longer life for tractor and for tools.

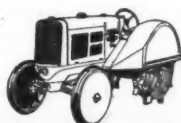
Ask your Oliver Dealer for a demonstration of 6-cylinder power and tools for orchard and grove. Or, send the coupon for complete information.



See your Oliver Dealer or check and mail the coupon to Oliver Farm Equipment Co., 400 W. Madison Street, Chicago, Ill.

Name.....

R. D. .... City..... State.....



- ☐ Orchard "70" Tractor
- ☐ Row Crop "70" Tractor
- ☐ 18-28 or 28-44 Tractor



- ☐ Tractor Gang Plow
- ☐ Walking Plow
- ☐ Tractor Cultivator



- ☐ Tractor Disc Harrow
- ☐ Horse Disc Harrow
- ☐ Spike Tooth Harrow

AFG-2-37



**SAVE  
TIME and  
MONEY**

with SEYMOUR SMITH

**"Snap-Cut"  
Pruners**



To grow "Top-Price Fruit," proper pruning is essential. "SNAP-CUT" pruners do this important work quicker, easier, cleaner—do not injure the bark or tire the user. Successful growers everywhere insist on them because

**"SNAP-CUT" PRUNERS  
CUT PRUNING COSTS**

The smooth, slicing "SNAP-CUT" action cuts through large, tough branches, small twigs and even twine with amazing ease—no shock. Light weight, handy sized, unbreakable tools, with easily replaceable cutting parts.

Buy a set of "SNAP-CUT" tools—do pruning easier. The investment will bring profitable returns in increased orchard profits. At your dealers' or order direct—money back guarantee. **FREE CIRCULAR.**

"SNAP-CUT" PRUNER—Rustproof chrome finish; non-pinching handles; "one-hand catch"—No. 118 (Ladies' size), 6" long, cuts 1/2" branches—\$1.25

No. 119, 8" long, easily cuts 3/4" branches—\$1.75

"SNAP-CUT" TREE PRUNER—The famous "Snap-Cut" mounted on an aluminum shaft ideal for cutting briars or high branches without reaching or stooping—No. 194—4 ft. \$3.50 No. 196—6 ft. \$4.00

"SNAP-CUT" LOPPING SHEAR No. 149—Larger, extra strong "Snap-Cut" pruner head mounted on sturdy oak handles, 25 inches long; easily cuts 1 1/2" branches—\$3.50

TIP-TOP TREE TRIMMER No. 13125—A sectional tree trimmer adjustable to 4, 8, or 12-foot lengths. A pull of the rope easily cuts large branches. Complete with saw blade—\$3.00

PRUNING SAW No. 714—With fast cutting 14-inch blade that can be swiveled in frame for cutting in close growth—replaceable blade—\$2.00

**THIS BOOK GIVES  
VALUABLE  
SUGGESTIONS**



"Secrets of Success in Pruning" is a 40 pp book on correct pruning of fruits, shrubs, vines, etc., written by a prominent authority. Price 10c or sent **FREE** to purchasers of any of the above tools.

**"Snap-Cut"  
PRUNERS  
OUTCUT all OTHERS**

SEYMOUR SMITH & SON, INC.  
62 MAIN ST. OAKVILLE, CONN., U. S. A.

# SOUR CHERRY SPRAYS

(Continued from page 12)

Lime-sulphur and Bordeaux are the two common fungicides generally recommended for the control of cherry leaf-spot. Four applications of lime-sulphur, two and one-half gallons in 100 gallons of water, are recommended for average Michigan conditions. The first application is made when most of the petals have fallen, the second two weeks later, and the third in another 10 days or two weeks. The fourth spray is applied soon after the fruit is harvested. Lead arsenate at the rate of two pounds in 100 gallons of spray solution is added in the pre-harvest sprays for the control of curculio, chewing insects and fruit-flies. During some seasons nicotine in one of the early applications may be necessary for the control of black cherry-aphis.

Bordeaux is a more specific fungicide for the control of cherry leaf-spot than lime-sulphur and will give better control of the disease under adverse conditions, especially when long periods elapse between sprays or when fewer sprays are used. Because of the dwarfing effect on the tree and fruit, and injury to the foliage, it is not recommended for Michigan growers who are able to obtain control with lime-sulphur.

Experiments conducted at East Lansing on the effect of a number of spray materials on tree and fruit show some interesting results. The experimental cherry orchard was planted five years ago for the specific purpose of studying the accumulative as well as the immediate effects of spray materials. Growth of the tree, yield and size of fruit, and the injury to the foliage are all considered in this study. The soil in this orchard is uniform and any difference in the trees in the various plots can largely be attributed to the effects of the spray materials applied.

The orchard is divided into 25 plots of 12 trees each. This gives a possibility of studying the effect of 25 different spray treatments. The treatments under test are lime-sulphur, varying concentrations of Bordeaux made from both high-calcium and high-magnesium lime, and some of the proprietary insoluble coppers, viz., Cupro K, Z-O, Oxobordeaux and red copper oxide.

The results in 1936 showed that trees sprayed with lime-sulphur produced higher yields, larger fruit, greater shoot and trunk growth and retained their foliage much longer than did trees sprayed with Bordeaux. The yield on the plots sprayed with lime-sulphur was from 10 to 25 per cent higher than on trees sprayed with Bordeaux. The difference in size of

fruit was so noticeable on casual observation that even the pickers commented on the variation in fruit size in the different plots. Cherries produced on the lime-sulphur sprayed trees averaged 146 to the pound while on trees sprayed with 6-8-100 Bordeaux the average was 199 to the pound. This dwarfing effect by the Bordeaux sprays is due to increased rate of water loss through the leaves. Due to the dry season, these differences in fruit size were greater than would be expected in years of more abundant rainfall.

Comparing the effects of different concentrations of Bordeaux, it was found that the higher the concentration the greater the dwarfing effect. From these results it appears that where Bordeaux is necessary for the control of cherry leaf-spot, the lower the concentration that can be used the less the dwarfing effect. In other words, it would be better to use a 4-6-100 than a 6-8-100 from the standpoint of injury.

The results from experiments comparing the Bordeaux sprays made from high-calcium lime and those made from high-magnesium lime have upset the general recommendation that high-calcium lime only should be used in spraying. In 1935, a year of abundant rainfall and soil moisture, the results showed that Bordeaux prepared from high-magnesium lime was as good and probably better than Bordeaux prepared from high-calcium lime for use on sour cherries from the injury standpoint. In 1936, a year of light rainfall, the high-magnesium lime Bordeaux sprayed trees retained twice as many leaves on October 15. They also produced slightly higher yields but were similar in growth of shoots and trunk when compared to trees sprayed with high-calcium lime Bordeaux. No information was obtained on the value of the high-magnesium lime Bordeaux on leaf-spot control. The high-magnesium lime Bordeaux sprayed trees, however, had twice as much copper on the foliage as those sprayed with high-calcium lime Bordeaux as shown by chemical analysis late in the season. This would indicate that the high-magnesium lime Bordeaux would be at least as effective in leaf-spot control.

The several new copper compounds tested compared favorably with lime-sulphur during one year of testing, in regard to growth of shoots and trunk, size of fruit and yield. More defoliation occurred, however, with some of these new materials late in the season. Red copper oxide was the most serious offender in this regard, and for

(Continued on page 35)



## BLACK SCALE

(Continued from page 14)

infestation. A serious shortcoming of this procedure lies in the fact that the owner or the spray operator may greatly underestimate the degree of infestation. The quantity of spray ranges from about 10 gallons per 1000 cubic feet of tree volume in the case of a light application, to 20 gallons in the case of a heavy application. This is approximately equivalent to 15 and 30 gallons, respectively, for a tree 15 or 16 feet in height.

The time spent in spraying the tree, or the rate of spray application, is no less important than the quantity of spray. In this particular, spraying an orange tree may be likened to washing a dirty garment. The garment can be submerged in the wash water in a second, but to bring the soap into intimate contact with every fiber and every particle of dirt, several minutes of vigorous rubbing may be necessary.

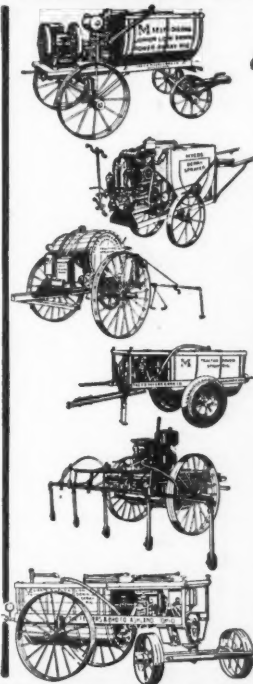
Fifteen gallons of spray can be discharged upon a tree in a few seconds if one uses a fire nozzle, but to produce a coverage that will get every insect on the dorsal and ventral surfaces of 50,000 or 100,000 leaves, the tree must be scrubbed, as it were, from every angle with countless millions of droplets of spray. For trees of medium to small size, the orifice in the spray nozzle should be 7/64 inch. This will give a discharge of about four and one-half gallons per minute at a pressure of 450 pounds, and about three and one-half minutes will be spent in applying 15 gallons of spray. For larger trees, an orifice of 8/64 inch, giving a discharge of about five and one-half gallons per minute, is desirable.

Efficiency in spraying falls in the realm of an art, and, as such, high accomplishment is largely an individual trait or gift, rather than something that is acquired by practice. The majority of spraymen are mediocre in efficiency and many rate low. However, this situation is not particularly different from that which obtains among artisans in other fields of work.

The sprayman must see to it that the spray penetrates the dense foliage, and separates and covers leaves that lie one upon another in heavy clumps. A pressure of 450 to 500 pounds is desirable in order to give the spray ample driving and carrying power. By maintaining a rhythmic back and forth movement of the spray gun, the branches are caused to sway, the clumps of leaves are turned topsyturvy, and the millions of droplets of spray are caused to rebound from leaf to leaf. The efficient sprayman knows how to secure the maximum disturbance of the foliage and branches with the spray applied. Some spraymen

(Continued on page 34)

## RELIABLE PARTNERS in Your Business



## MYERS SELF OILING POWER SPRAYERS



It simply won't do to depend on unreliable spray equipment. A single breakdown at the wrong time can work serious damage to the crop. That is why it means so much to say that MYERS Power Sprayers are absolutely reliable. You can depend on them like a good partner—to see you through in the pinches. Remember that MYERS are veterans in building pumping equipment of many kinds. Every MYERS model is designed by practical men to meet practical conditions. And the completeness of the MYERS line assures you not only of the correct type of

sprayer for your particular job, but of the immediate availability of equipment, parts and accessories to meet any emergency. MYERS offers you the very real advantage of reliable machines, backed by a reliable organization.

• • •

You can get MYERS Power Sprayers in sizes, styles and combinations to take care of every spraying job, large or small, in orchards, groves, vineyards, row crops, fields and gardens. The line includes engine powered sprayers; traction and tractor driven outfits; berry sprayers; green-house sprayers and tobacco sprayers; as well as knapsack and compressed air sprayers and hand operated bucket and barrel sprayers of many kinds. The MYERS catalog of spray rigs, guns, booms, extensions, nozzles and accessories forms a reference book on spray equipment that is of unusual completeness. Every grower should have a copy. Send for yours TODAY.



In addition to covering complete line of hand and power sprayers, the illustrated MYERS Spray Catalog contains much valuable information on spraying. We will be glad to send you a free copy, together with the name of our nearest dealer.

### THE F. E. MYERS & BRO. CO.

594 Orange Street

Ashland, Ohio

"Pump Builders Since 1870"

Send me free information on: Power Sprayers . . . . ☐  
Hand Sprayers ☐ Water Systems ☐ Centrifugal Pumps . . . ☐  
Power Pumps . . ☐ Pump Jacks . . ☐ Hay Unloading Tools . . ☐  
Hand Pumps . . ☐ Sump Pumps . . ☐ Door Hangers . . . . ☐

Name \_\_\_\_\_

Address \_\_\_\_\_



(K-7)

# HARDIE *alone*

## GIVES THESE SPRAYER VALUES

The real value of a sprayer is what it will do for you. Design and materials are important only as they contribute to satisfaction in ownership and efficiency in use.

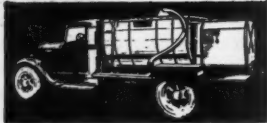
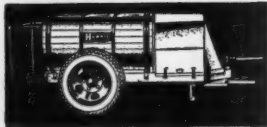
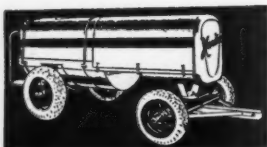
The Hardie is a vertical crankshaft driven pump because experience has proved that this type of pump is the only pump that consistently can measure up to the requirements of modern high pressure spraying.

All working parts of the Hardie are easily accessible, saving time and trouble and money. Lubrication is complete and selective, saving wear and maintenance cost. Every part gets the exact grade of clean oil it should have. Service is easy and inexpensive whenever necessary.

The almost unbelievably low cost of operation is made possible by Hardie design and construction. Maintenance cost, even over a period of years, is practically nothing—records prove it. The long, long life of reliable, dependable performance built into every Hardie constitutes tremendous investment value.

The maximum benefits of modern high pressure spraying are enjoyed by the Hardie owner at the very minimum of cost. Hardie alone gives these sprayer values.

THE HARDIE MFG. COMPANY • HUDSON, MICH.  
Branch Factories, Sales and Service Offices: Portland, Ore., Los Angeles, Calif., Kansas City, Mo., Brockport, N.Y., Hagerstown, Md. Export Dept., Detroit, Mich.



You will like to read and look at the Hardie 64-page 1937 catalog showing as it does the very latest developments in the sprayer industry. Every grower should have a copy. We have one for you. Drop us a line and we will send it promptly.

# HARDIE

## DEPENDABLE SPRAYERS

Vertical crankshaft driven pump with long connecting rods avoiding side-thrust.

All important parts are separate units easily accessible and economically replaced.

Volumetric pump efficiency 96% to 99%—highest in the industry.

Delivers full rated capacity and pressure easily all the time at slow speed.

Individual selective lubrication with clean oil for every moving part.

Fully lubricated plunger and cup. A feature not found in any other pump.

Roller bearing trucks. Interchangeable steel or wood tanks.



## FLORIDA CITRUS PESTS

(Continued from page 15)

A number of other insects may cause trouble including the citrus aphids for which various forms of nicotine and other contact poisons are used; pumpkin bugs and related plant bugs which have to be collected and "dunked" in kerosene and water if the grower has been so unwise as to let certain types of cover crops, in which they breed, go too long; cottony cushion scale which can be controlled by Vedalia ladybeetles; mealybugs which so far have generally avoided man-devised control methods, although usually being controlled by fungi, and a number of insects of less importance.

There are two major diseases which are controlled by sprays and in both cases copper compounds are used, the commonest spray being the old reliable Bordeaux but with the newer copper compounds, which leave less residue, playing an increasingly important part. The diseases are:

**Lemon Scab**, more commonly known in Florida, where there are relatively few lemons, as just *Scab*. It attacks grapefruit and in severe cases will cause large protuberances on the fruit with a sort of potato color; it does not attack oranges, although occasionally found on Temple oranges which are probably orange-tangerine hybrids. The control recommended for it at the present time includes a dormant or pre-bloom spray of 3-3-50 Bordeaux followed by a half-strength Bordeaux (1½-1½-50) applied when most of the petals have fallen. The use of the so-called half-strength Bordeaux is a development of the last few years and gives almost the same control, when applied after the bloom, as does the full strength which has been standard in this State for many years. At the same time it results in much less scale trouble.

**Melanose**, which occurs on both oranges and grapefruit as well as on most other citrus. For melanose one or two half-strength Bordeaux sprays, one applied after the fruit is set, are recommended and the low residue copper sprays are also used very extensively.

A number of other diseases are common on citrus but are controlled by other means than spraying.

In addition to the wide use of the very weak Bordeaux spray, it is also interesting to note the widespread use of wettable sulphur in copper sprays as an aid to insect and mite control. Except for occasions where oil emulsions are indicated as spreaders and scalecides in Bordeaux, the use of wettable sulphur is rapidly becoming universal. Lime-sulphur sprays are also reinforced with wettable sulphurs in order to prolong the period of mite control following the application.



The extent to which pest control is needed varies considerably in different locations in the State but is more a matter of local conditions than a matter of geography. Hammock groves in which some of the oaks, hickories, magnolias or cabbage palmettos are still growing and subjecting the citrus

trees to partial shade frequently escape the use of sprays or dusts for years. It is in the hammocks that the sour orange went wild following its introduction by the Spanish and the conditions probably very closely resemble those in the original habitat of the orange.

## SPRAY AND DUST SCHEDULES FROM BETTER FRUIT PROGRAM OF THE FLORIDA CITRUS COMMISSION

### SCHEDULE A

For Use When Scab and Melanose Are Expected To Be Severe and for Scale, Rust Mites, Whiteflies and Red Spiders

I. Scab and melanose dormant spray, just before growth starts, usually applied Jan. 1 to Feb. 10. Use either Bordeaux 3-3-50 or its fungicidal equivalent in other forms of copper which have been proved satisfactory. Oil emulsion at  $\frac{1}{4}$  to  $\frac{1}{2}$ % actual oil or some other suitable spreader should be included. If red scale are present add oil emulsion at 1% actual oil. If no oil is used, wettable sulphur should be added at 5 to 10 lbs. per 100 gals. and will substitute for application VI if rust mites have not been so numerous as to require VI earlier.

II. If scab control is most important, spray when  $\frac{1}{2}$  of petals have fallen. If melanose control is most important, apply 2 to 3 weeks after bloom has shed. Use either Bordeaux  $1\frac{1}{2}$ -1- $\frac{1}{2}$ -50 or its fungicidal equivalent in other forms of copper which have been proved satisfactory. Wettable sulphur 5 to 10 lbs. per 100 gals. should be added for the control of scale crawlers, rust mites and red spiders.

III. For rust mites, apply 3 to 6 weeks after II if no wettable sulphur was used in II, otherwise 6 to 8 weeks. Use either 1) Liquid lime-sulphur 2 gals. per 100 gals. plus 5 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 5 to 8 lbs. per 100 gals. plus wettable sulphur as above, or 3) Sulphur dust.

IV. For scale and whiteflies, May through August but May 15 to July 15 preferred. Use oil emulsion, 1 to 1% actual oil. **Note: Use dilution recommended by manufacturer of oil used.** Be sure foliage is dry but not wilted. This spray should not follow closer than 3 to 4 weeks after application III, or even longer if noticeable quantities of sulphur are present on the foliage. **This application and its thoroughness is extremely important.**

V. For rust mites, July 15 through October, as needed. On early oranges sulphur dust is preferable to sulphur spray. On late oranges use either 1) Liquid lime-sulphur 1 to  $1\frac{1}{2}$  gals. per 100 gals. plus 5 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 3 to 6 lbs. per 100 gals. plus wettable sulphur as above, or 3) Sulphur dust.

VI. December or January, if rust mites are numerous on the fruit. Use either 1) Liquid lime-sulphur 2 gals. per 100 gals. plus 5 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 5 to 8 lbs. per 100 gals. plus wettable sulphur as above, or 3) Sulphur dust.

### SCHEDULE B

For Use When Melanose Is Expected To Be Severe But Scab Is of Minor Importance, and for Scale, Whiteflies, Rust Mites and Red Spiders

I. For scab. In some interior sections of the State the following dormant spray will help to prevent minor infections of scab. Use either 1) Liquid lime-sulphur 3 gals. per 100 gals. if fruit has been removed, or  $2\frac{1}{2}$  gals. per 100 gals. if fruit is still on the trees, or 2) Dry lime-sulphur 6 to 10 lbs. per 100 gals. Wettable sulphur, 5 to 10 lbs. per 100 gals. may be added to either of the above. **This must be applied before any new growth starts.** This application may be particularly desirable if VI has been omitted.

II. For melanose, apply 2 to 3 weeks after bloom has shed. Use either Bordeaux  $1\frac{1}{2}$ -1- $\frac{1}{2}$ -50 or its fungicidal equivalent in other forms of copper which have been proved satisfactory. Wettable sulphur 5 to 10 lbs. per 100 gals. should be added for the control of scale crawlers, rust mites and red spiders.

III. For rust mites, apply 3 to 6 weeks after II if no wettable sulphur was used in II, otherwise 6 to 8 weeks. Use either 1) Liquid lime-sulphur 2 gals. per 100 gals. plus 5 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 5 to 8 lbs. per 100 gals. plus wettable sulphur as above, or 3) Sulphur dust.

IV. May through August, but May 15 to July 15 preferred. If red scale are present or if purple scale are noticeable use oil emulsion 1 to 1% actual oil. **Note: Use dilution recommended by manufacturer of oil used.** If no red scale are present and if purple scale are scarce, use either 1) Liquid lime-sulphur 1 to  $1\frac{1}{2}$  gals. per 100 gals. plus 5 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 3 to 6 lbs. per 100 gals. plus wettable sulphur as above, or 3) Sulphur dust as needed, if oil is used and rust mites appear.

V. For rust mites and scale crawlers. Sept. 20 to Oct. 15. Use either 1) Liquid lime-sulphur 1 to  $1\frac{1}{2}$  gals. per 100 gals. plus 5 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 4 to 6 lbs. per 100 gals. plus wettable sulphur as above,

or 3) Sulphur dust (for rust mites only). Sulphur dust is preferable to sulphur spray on early oranges. If red scale are present or purple scale or whiteflies are noticeable, use oil emulsion 1 to 1% actual oil in Sept. or Oct. **Note: Use dilution recommended by manufacturer of oil used.**

VI. December or January, if rust mites are numerous on the fruit. Use either 1) Liquid lime-sulphur 2 gals. per 100 gals. plus 5 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 5 to 8 lbs. per 100 gals. plus wettable sulphur as above, or 3) Sulphur dust.

### SCHEDULE C

For the Control of Scale, Whiteflies, Rust Mites and Red Spiders When Neither Scab Nor Melanose Is Important

I. Omit dormant spray.

II. March 20 to April 15 (after fruit is set). Use either 1) Liquid lime-sulphur 2 to  $2\frac{1}{2}$  gals. per 100 gals. plus 5 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 5 to 8 lbs. per 100 gals. plus wettable sulphur as above. **This spray is very necessary to prevent early damage by rust mites on young fruit and to kill scale crawlers and red spiders.**

III. If rust mites appear, use either 1) Liquid lime-sulphur 2 gals. per 100 gals. plus 5 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 5 to 8 lbs. per 100 gals. plus wettable sulphur as above, or 3) Sulphur dust. Use sulphur dust instead of spray if oil emulsion is to be used in IV, below.

IV. May through August, but May 15 to July 15 preferred. If red scale are present or if purple scale are noticeable use oil emulsion 1 to 1% actual oil. **Note: Use dilution recommended by manufacturer of oil used.** If no red scale are present and if purple scale are scarce, use either 1) Liquid lime-sulphur 1 to  $1\frac{1}{2}$  gals. per 100 gals. plus 5 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 3 to 6 lbs. per 100 gals. plus wettable sulphur as above, or 3) Sulphur dust as needed, if oil is used and rust mites appear.

V. For rust mites and scale crawlers. Sept 20 to Oct. 15. Use either 1) Liquid lime-sulphur 1 to  $1\frac{1}{2}$  gals. per 100 gals. plus 5 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 4 to 6 lbs. per 100 gals. plus wettable sulphur as above, or 3) Sulphur dust (for rust mites only). Sulphur dust is preferable to sulphur spray on early oranges. If red scale are present or purple scale or whiteflies are noticeable, use oil emulsion 1 to 1% actual oil in Sept. or Oct. **Note: Use dilution recommended by manufacturer of oil used.**

VI. December or January, if rust mites or red spiders are numerous. Use either 1) Liquid lime-sulphur 2 gals. per 100 gals. plus 5 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 5 to 8 lbs. per 100 gals. plus wettable sulphur as above, or 3) Sulphur dust (for rust mites only).

### SCHEDULE D

Use for Rust Mites Only  
(If Red Spiders Appear Use Schedule C)

I. Omit dormant spray.

II. March 20 to April 15. Use either 1) Liquid lime-sulphur 2 to  $2\frac{1}{2}$  gals. per 100 gals. plus 5 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 5 to 8 lbs. per 100 gals. plus wettable sulphur as above, or 3) Sulphur dust. **This application is very necessary to protect young fruit from early damage by rust mites.**

III. May 10 to June 10. Use either 1) Liquid lime-sulphur 2 gals. per 100 gals. plus 3 to 6 lbs. wettable sulphur, or 2) Dry lime-sulphur 5 to 8 lbs. per 100 gals. plus wettable sulphur as above, or 3) Sulphur dust as needed.

IV. During summer if rust mites appear. Use either 1) Liquid lime-sulphur 1 to  $1\frac{1}{2}$  gals. per 100 gals. plus 3 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 3 to 6 lbs. per 100 gals. plus wettable sulphur as above, or 3) Sulphur dust as needed.

V. September or October. Use either 1) Liquid lime-sulphur 1 to  $1\frac{1}{2}$  gals. per 100 gals. plus 5 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 4 to 6 lbs. per 100 gals. plus wettable sulphur as above, or 3) Sulphur dust as needed. Sulphur dust is preferable to sulphur spray on early oranges.

VI. December or January, if rust mites are numerous. Use either 1) Liquid lime-sulphur 2 gals. per 100 gals. plus 5 to 10 lbs. wettable sulphur, or 2) Dry lime-sulphur 5 to 8 lbs. per 100 gals. plus wettable sulphur as above or 3) Sulphur dust.

The perfect all purpose pruner  
THE H.K.P.  
**PORTER POINTCUT**



Cuts suckers on 'the point' with small handle opening. Cuts  $1\frac{1}{4}$ -inch limbs in throat of blades, with full handle opening. Designed especially for fruit, nursery and horticultural use—where closer, cleaner pruning is desirable. Both blades have sharp cutting edges which prevent bruising the bark and permit the blades to be placed close against the main branch and the best place for pruning. Spur on upper blade supports lower blade and resists the tendency to cross the edges. Patented slide shift gives a 50% to 100% increase in cutting power. Light, handy in size, strong construction. Sells for \$5.00.

Also available with 24" handles at \$5.10 and 27" at \$5.20.

If your dealer cannot supply, order direct from us, or send for circular.

H. K. PORTER, INC., EVERETT, MASS.  
The Bolt Clipper People—Est. 50 years.

**Standard Garden Tractors**

Powerful 1 and 2 Cylinder Tractors for Small Farms, Gardeners, Florists, Nurseries, Fruit and Poultry Men.

**NEW MODELS**  
With Ample Power for Field, Haying and Truck Crop Tools.

Also Run Belt Machines, Pumps, Saws, etc. High Wheels—Enclosed Gears.

**LOW PRICES**  
Write for Easy Terms Plan and **Free Catalog**

**STANDARD ENGINE CO.**  
Minneapolis, Minn. Philadelphia, Pa. New York, N. Y.  
3311 Como Ave. 2445 Market St. 205 Cedar St.

**Build Your Own**  
Wind Charger from old auto generator. We show you how. Make money building for others. Light your buildings, play radio, operate washing machine and other motors. Dime brings complete plans and 1937 catalog. Over 50 other changes for 6-12-32 and 110 volt plants. Satisfaction guaranteed.

LEJAY MFG. CO., 1463 W. Lake, Minneapolis, Minn.



This Modern, homelike Hotel, on FLORIDA'S most healthful SOUTHEAST COAST, affords a refined atmosphere for rest. ONLY 25 minutes' drive to MIAMI and its varied diversions. MODEST RATES: GOLF, FISHING, SHUFFLEBOARD, OCEAN BATHING, TENNIS, CLOCK GOLF, Etc.—Ownership-Management.

**DANIA BEACH HOTEL**  
DANIA FLA.

# NICHOLS

TRIANGLE



BRAND

## A NEW COPPER FUNGICIDE

Z-O is the long sought copper fungicide which controls *without injury*.

Studied and tested on commercial plots for 5 years, Z-O is now offered with full assurance that it will perform according to our claims.

The copper in Z-O is given up evenly at a rate which kills the spores and in a form which does not harm plant tissues.

**NOTE:** High copper content is no guarantee of control. The copper may be locked up so tightly in certain combinations that little is available for killing spores. In Z-O the full copper content is available for control.

Z-O is used in low concentrations (1 to 1½ lbs. in 100 gals.), therefore is economical. Packed in 50 lb. bags and 3 lb. tins. Write for folder.



**NICHOLS COPPER CO.**

A Unit of the Phelps Dodge Corporation  
40 WALL ST., N.Y.C. 230 N. MICH. AVE., CHICAGO, ILL.

## WHEN YOU BUY *Niagara* YOU BUY PROTECTION

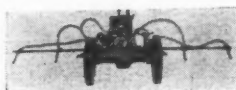
Not only builders of a complete line of pest-fighting equipment (both dusters and sprayers) . . . . .

and processors of a most complete line of materials for dusting and spraying

but Niagara has also secured the best available talent for sales and service promotion to insure the best possible results from this equipment. Fruit growers are secure in believing that anything which is sold to them by Niagara will receive the most vigilant attention.



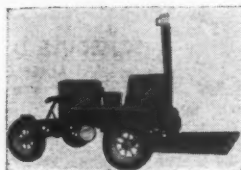
**Niagara Sprayer and Chemical Co., Inc.**  
Middleport, New York  
Box 45



Cotton Dusters



Row Crop Dusters



Fruit Dusters



Row Crop Sprayers



Fruit Sprayers of All Kinds

## BLACK SCALE

(Continued from page 31)

never become proficient in this technique.

For a period of many years spraying was done entirely from the ground. The control obtained on the main body of the tree was much better than that in the top portion. To overcome this shortcoming, spray rigs have been equipped with towers, and at present practically every spray crew consists of three spraymen, two who work on the ground and one who works in the spray tower directing his efforts to spraying the top portion of the trees. Even with this system, the control in the top portion generally is poorer than that on the main body of the tree.

Highly refined oils, known also as summer oils, of the light and light-medium grades of heaviness, are used in spraying for the black scale. The spray concentration most commonly employed is one and one-half or one and two-thirds per cent oil.

Injurious effects of many types have been experienced in the use of oil sprays on orange trees. The most serious effects have been the excessive dropping of fruit, impaired coloring of fruit, reduction in blossoming, dying of branches, and various types of spotting of the rind. To minimize the risk of unfavorable tree and fruit reactions, it is desirable to do the spraying in August and the early part of September, and to use the lowest amount of oil and the lightest grade of oil that will give effective control of the insect. Three grades of oil are available for use in spraying for the black scale; grade 1 having a viscosity of 60 seconds, grade 2 having a viscosity of 65 seconds, and grade 3 having a viscosity of 70 seconds. These viscosity numbers are significant only as applied to spray oils that are produced from California crude oil. Technically, the different grades are distinguished by distillation range rather than viscosity.

## Summer Tour of A.P.S.

At the third official business session of the American Pomological Society held during the course of the convention in Roanoke, Va., the desirability of making a tour of the West Coast was discussed and finally voted as a project for the ensuing year.

John T. Bregger, 209 West Main Street, Waynesboro, Pa., was appointed chairman of a committee to make further investigation as to the tour, its cost, itinerary, etc. Mr. Bregger invites correspondence relative to your wishes in the matter, and it is hoped that a rather large group of fruit growers, horticulturists, and friends will avail themselves of this opportunity to make a tour of the fruit growing region of the West Coast under the auspices of the A. P. S.

Some 10 or 12 years ago a similar tour was arranged and it proved to be extremely popular and is still talked about as one of the high spots among the projects sponsored by the A. P. S.



## SOUR CHERRY SPRAYS

(Continued from page 30)

this reason is not considered safe for cherries in Michigan.

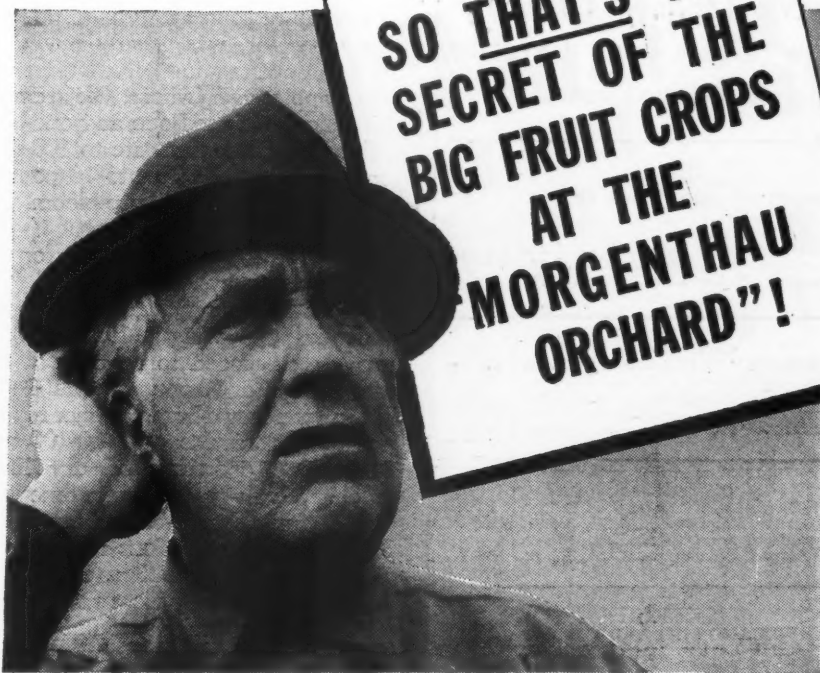
Experiments designed to test the control of the leaf-spot fungus are carried on in a block of trees removed and separate from the injury test block. This block of trees has been nicknamed the "pest-house." Here the supply of spore inoculum and resulting infection is encouraged by allowing the leaves of the previous year which contain the spores to remain undisturbed on the ground. Furthermore, the infections are allowed to become established on some trees before the sprays are applied. This is in direct contrast to procedure in the spray injury block where every precaution is observed to avoid infection which would complicate the injury results.

In the control studies, where liberties were taken with the time and frequency of the spray applications, lime-sulphur gave the poorest control of any of the materials tested. Under these conditions the copper sprays were far more effective in controlling the disease. Of these sprays, Bordeaux and red oxide of copper, although controlling the disease, lost far too many leaves from copper injury to be considered as safe cherry sprays for Michigan conditions. The other three sprays tested showed considerable promise as cherry fungicides. Cupro K was effective on the foliage over the longest period of time probably due to its superior sticking qualities. At the end of the season this spray showed a copper deposit five times greater than Z-O and 10 times greater than Oxobordeaux.

One of the interesting observations in these experiments was the difference in the effect of lime-sulphur and copper sprays on infected leaves. Where infections had occurred, lime-sulphur penetrated the leaf, turned it yellow in a few days and caused it to fall to the ground. The insoluble copper sprays merely killed out the fungus in the infected spots. The leaves with "burned-out" lesions remained on the trees, green and functioning, until the end of the season without further infection.

Although lime-sulphur showed the poorest results under the extreme conditions of the disease control experiments, it is well known that where properly applied it controls the disease and is one of the least injurious of cherry sprays. It seems advisable that growers who get good control with lime-sulphur should continue to use it. Several of the new insoluble copper sprays show exceptional promise and appear safe to use. Before using them on a large scale it is suggested they be given a limited trial by interested growers.

FEBRUARY, 1937



## They increased their yield 189 Bushels per Acre by applying 5½ pounds of Sulphate of Ammonia to each Tree

**H**ERE are the results of an official test in the Morgenthau Orchard—results that you can use to increase your own fruit yields.

The test covered a period of six years—under the careful supervision of R. C. Collison and L. C. Anderson, of the New York State Agricultural Experiment Station—and is reported in full in Bulletin No. 661 issued by the Station.

These results definitely prove that it pays to feed fruit plenty of Sulphate of Ammonia.

Where no Sulphate of Ammonia was used the official yield was 303 bushels of fruit per acre. Where 3 pounds of Sulphate of Ammonia per tree was used the official yield was 434 bushels per acre. And with 5½ pounds of Sulphate of Ammonia

per tree the official yield was 492 bushels per acre. *That's an increase of 189 bushels of fruit per acre!*

Get this extra profit from your fruit. *Make sure* by insisting on Arcadian Sulphate of Ammonia. It sets a big, full crop early because it's extra rich in quick-acting nitrogen. It feeds fruit fast, yet does not leach away. It's clean, safe and easy to handle.

And *this* is important: Arcadian Sulphate of Ammonia is made in America by Americans. When you use it you make these American workers and their families better able to buy your fruit.

So ask for your dressing by name—Arcadian Sulphate of Ammonia.

# ARCADIAN SULPHATE OF AMMONIA

Reg. U. S. Pat. Off.

—The *Barrett* Company—  
40 RECTOR STREET NEW YORK, N. Y.

## RENEW YOUR SUBSCRIPTION NOW!

SAVE Money—Order at  
Low Cost Your Favorite  
Magazines

Club No. 101	
AMERICAN FRUIT GROWER.....1 yr.	ALL
Woman's World.....1 yr.	SIX
Good Stories.....1 yr.	ONLY
Home Circle.....1 yr.	\$1.00
Illustrated Mechanics.....1 yr.	
Mother's Home Life.....1 yr.	

Club No. 105	
AMERICAN FRUIT GROWER.....1 yr.	ALL
Pictorial Review.....1 yr.	FIVE
Pathfinder (weekly).....1 yr.	ONLY
Good Stories.....1 yr.	\$1.60
Illustrated Mechanics.....1 yr.	

Club No. 111	
AMERICAN FRUIT GROWER.....1 yr.	ALL
McCall's Magazine.....1 yr.	FOUR
Household Magazine.....1 yr.	ONLY
Illustrated Mechanics.....1 yr.	\$1.40

Club No. 112	
AMERICAN FRUIT GROWER.....1 yr.	ALL
Pictorial Review.....1 yr.	FOUR
Woman's World.....1 yr.	ONLY
Household Magazine.....1 yr.	\$1.45

Club No. 114	
AMERICAN FRUIT GROWER.....1 yr.	ALL
Breeder's Gazette.....1 yr.	FIVE
Woman's World.....1 yr.	ONLY
Good Stories.....1 yr.	\$1.00
Poultry Tribune.....1 yr.	

**AMERICAN FRUIT GROWER**  
For One (1) Year and Your  
Choice of Any Three of the  
Following Magazines for  
ONLY \$1.00

### Check Three

- ( ) American Poultry Journal.....1 yr.
- ( ) Cloverleaf American Review.....1 yr.
- ( ) Everybodys Poultry Magazine.....1 yr.
- ( ) Gentlewoman Magazine.....1 yr.
- ( ) Rhode Island Red Journal.....1 yr.
- ( ) Successful Farming.....1 yr.
- ( ) Michigan Farmer.....1 yr.
- ( ) Pathfinder (weekly).....26 issues
- ( ) Illustrated Mechanics.....1 yr.
- ( ) Plymouth Rock Monthly.....1 yr.
- ( ) Mother's Home Life.....1 yr.
- ( ) Good Stories.....1 yr.
- ( ) Home Circle.....1 yr.
- ( ) Ohio Farmer.....1 yr.
- ( ) Household Magazine.....1 yr.
- ( ) Woman's World.....1 yr.
- ( ) Leghorn World.....1 yr.
- ( ) Poultry Tribune.....1 yr.
- ( ) Capper's Farmer.....1 yr.
- ( ) Breeder's Gazette.....1 yr.
- ( ) Home Arts Needlecraft.....1 yr.

AMERICAN FRUIT GROWER, 1370 Ontario St.,  
Cleveland, Ohio.

Enclosed find \$\_\_\_\_\_ for which please send me  
the magazines marked with an X.

Name \_\_\_\_\_

Postoffice \_\_\_\_\_

R.F.D. \_\_\_\_\_

State \_\_\_\_\_

# PREVENTING APPLE SCAB

(Continued from page 13)

Commercial lime-sulphur solution used for many years according to the formula of two and one-half gallons of the liquid concentrate per 100 gallons of water, was greatly modified, and with outstanding benefit to growers of apples everywhere. We are now using not to exceed one and one-half gallons of the concentrate to 100 gallons of water, plus five to 10 pounds of spray lime for the pre-bloom and petal-fall applications, and  $\frac{3}{4}$ -100 plus five or 10 pounds of lime for the post-bloom sprays.

Notwithstanding that dry lime-sulphur, first appearing in 1922 in Ohio, was recommended to be used at the rate of eight or 10 pounds per 100 gallons of water, we began at once to also use it in formulas of 6-10-100 and 3-10-100 proportions of dry lime-sulphur, high-grade spray lime and water, for the pre-bloom and post-bloom spray applications respectively. So satisfactory were these mild "twin formulas" that they were used during a full 15-year period without change. In the meantime many orchard owners in Ohio, and in neighboring states, adopted the formulas and were equally well pleased with the results.

In all of the above-mentioned mild spray formulas lead arsenate was added to the after-bloom formulas at the usual times and proportions.

Private orchard owners were first to recognize the wholesome effects of less dangerous but amply effective spray formulas applied with due regard to the highly important requisites of timeliness and thoroughness. Manufacturers of spraying equipment, too, closely observant not only of the newer trends in spraying, but of the resultant needs of apple growers for spraying machinery of increased power and capacity, proved tremendously helpful in prompt transformation of spraying practices.

Producers of fungicidal spraying materials at first were somewhat less inclined to become favorably impressed by the idea of modification of formulas by use of reduced proportions of chemicals to the usual quantities of water. Later, however, compounds designed expressly for dissolving in water, in expeditious preparation of safe and effective spraying solutions, became, and still remain, almost confusingly numerous.

We already have mentioned the desirability of observing the highly important requisites of 1) timeliness and 2) thoroughness of application of sprays for prevention of fungous diseases of foliage and fruit of the apple. There are, however, additional factors scarcely less contributory to successful spraying that clearly have been demonstrated during a long period of carefully conducted field experiments in prevention of apple scab,

namely: 3) Unfailing observance of the especially critical period of apple scab infection usually occurring just before, during or immediately following the period of apple bloom, and use of spray formulas of undoubted efficiency combined with safety. 4) Equal observance of the much less dangerous period following petal-fall by use of very mild and harmless but amply efficient formulas providing that scab has been successfully eliminated during the pre-pink, pink and petal-fall stages of the budding and flowering season. 5) Unfailing remembrance of the fact that there are marked differences in degrees of susceptibility and resistance to scab of the numerous widely grown varieties of apples. 6) Equally constant consideration that there are equally great differences in susceptibility and resistance of different varieties of the fruit to russetting by action of excessively concentrated spray formulas. 7) Discriminative use, therefore, of fungicidal materials and formulas carefully and generously applied, at all times taking into full consideration seasonal and varietal conditions and characteristics.

Strangely but fortunately for orchardists, in numerous cases the varieties of apples more susceptible to scab are those more resistant to russetting by dangerously caustic sprays. On the other hand, those varieties very easily and seriously russeted by spraying are so inherently resistant to scab that only very mild and safe formulas are necessary to keep the foliage and fruit entirely clear of the disease. As an illustration of this, a few of the generally familiar varieties of apples belonging to each of the two groups are given:

**Group 1.**—Susceptible to scab but peculiarly resistant to russetting: Albar, Banana, Delicious, McIntosh, Rome, Spy and Stayman.

**Group 2.**—Susceptible to russetting but peculiarly resistant to scab: Baldwin, Ben Davis, Ensee, Grimes, Golden Delicious, Hubbardston, Jonathan, Wagener and Wealthy.

Wettable sulphur is pure, superfine or processed sulphur to which is added a so-termed wetting agent that causes the sulphur to readily mix with water for spraying purposes. These wettable sulphurs exert their efficiency in scab prevention through the medium of their fumes generated by oxidation. They are non-caustic yet highly efficient as fungicidal agents and, like the more dilute formulas of lime-sulphur plus lime, are well adapted to use on varieties included in Group 2. The only objection to the well known brands of commercially prepared wettable sulphur is their rather high price. The cost of materials, however,

(Continued on page 39)



## STATE NEWS

(Continued from page 26)

of markets, who have been working on this project over a two-year period.

The Commissioner of agriculture, through his director of markets, will have authorization by this proposed bill to set up grades and establish brands after conference with growers. This makes the bill a "growers" bill rather than a State statute.

Inasmuch as apple culture is an important part of Vermont agriculture, as pointed out by Dr. John M. Thomas, president of the society, growers voted to appropriate \$5,000 to extend research work in horticulture at the experiment station. This includes further intensive studies on soil management and insect and disease control.

Good soil, good drainage and available moisture throughout the growing season—these are the essentials for a good apple orchard, asserted Prof. H. A. Rollins of Connecticut State College.

Other opinions of Prof. Rollins: Improper methods of pruning may result in lower yields. It is important to remove the slender branches, as they are usually non-fruitful. Thinning of fruit makes for better size and better color. A well-planned and carefully carried out spray program should result in a clean crop of apples. Wettable sulphur is generally desirable for summer spraying. It is a poor manager who, after special care in production, permits rough handling during harvesting, packing and storing.

Movies on these orchard operations stirred growers to new "good-work" determinations.

Grading and packing can be varied to suit the demands of the market and the grower has greater choice of markets when fruit is held in farm storage, commented Prof. C. J. Gunness of Massachusetts State College.

Standard storage temperature is 32 degrees. Some growers are satisfied to cool their fruit at 40 or 45 degrees. Fruit will keep longer at a lower temperature but will ripen at a higher one. Relative humidity should be 85 to 90 degrees.

In general the next two or three years will be a good time for planting commercial apple orchards in Vermont, provided plantings are made on land well adapted to apple growing. There will in all probability be an increase in consumption with a decrease in the number of apple trees in the next 10 years, stated Carl E. Van Deman, extension horticulturist. The McIntosh is considered the most suitable variety for Vermont.

Four important points to study are: General price level as the price of apples rises and falls with other prices; production the country over; increased demand for apples resulting from advertising; the individual grower, his methods, abilities and capacity for getting good advice and FOLLOWING it.

Prof. M. B. Cummings, secretary of the society for 27 years, reported the society now has over 400 members distributed in 14 counties and almost every town in the State.—M. B. CUMMINGS, Sec'y, Burlington.

**TENNESSEE**—Gambling on the economy of scarcity, Tennessee apple and peach experts are planting new orchards in territory recently made accessible by improvement of roads and opening of new highways. They are fully conscious of the reduced crops caused by freezes and droughts the past two seasons, together with improved market conditions.

Reports are that the stock of peach trees in the large Winchester area nurseries has already been sold out!

Feeling ready money, like the singular bird in the hand, far exceeds the value of potential earnings, Rhea County (which includes important Dayton area) strawberry growers, rather than depend upon the berry crop next season, are sacrificing their plants for cash, according to County Agent W. S. Ross.

What of pyrethrum? Who are they? Dr. Brooks D. Drain, Knoxville horticulturist, answers all and any queries regarding the.

(Continued on page 42)

# FARMERS NEEDED IT ...SO FORD BUILT IT!



A NEW STAKE BODY on the 112-inch wheelbase commercial car chassis. A great type for farm hauling. Load space 80 inches long, 62 inches wide, 29½ inches high.

NEW

60 HP. V-8 ENGINE

For 1937, Ford brings new economy to the farmer with an entirely new 60-horsepower V-8 . . . the thriftiest engine Ford has ever built for light farm hauling. And improvements in the 85-horsepower V-8 make it more economical than many engines of fewer cylinders and lower power. With these two engines, Ford offers a full line of optional equipment to apply power with greatest economy and to meet individual load requirements. Many combinations are available, one of which will do your job at lowest cost.

Many new features have been added to reduce operating cost, improve

appearance and increase safety and long life. These advancements, with Ford's many famous tried-and-tested safety and reliability features, make the New 1937 Ford V-8 Trucks and Commercial Cars the greatest values in Ford history.

See for yourself what Ford has done to cut farm hauling costs. Ask your Ford dealer for an "on-the-job" test under your own operating conditions and get the facts about Ford's new economy.

• Convenient, economical terms through Authorized Ford Finance Plans of the Universal Credit Company.



THE NEW  
1937 FORD V-8  
TRUCKS AND COMMERCIAL CARS

You'll  
Like  
This Brand  
**NEW**  
**CENTRAL**  
**Sprayer**  
**Valve!**

Fig. 601F.  
3/4" male pipe  
inlet—standard  
hose outlet



Here's the new design angle valve that growers are going for in a big way. It's a heavyweight valve with extra large waterway. Rugged Central Quality throughout—built to give real service. Saves use of a nipple. Before buying ANY sprayer valves—write for Central sample and prices.

**CENTRAL** BRASS  
MFG. CO.  
Dept. "S," 2954 East 55th St., Cleveland, O.

*A penny saved  
is not good sense,  
When a Hamilton Gun  
will save expense  
Will Hamilton*

Spray Guns with Controlled Streamline  
**W. L. HAMILTON & CO.**  
BANGOR - MICHIGAN

Six Models - A gun for every purpose

**KILL CODLING MOTH**  
—WITH—

**COD-O-CIDE**

**TREE BANDS . . .** The original Tried and Proven band. Ten years successful use to their credit. . . State number of 250-foot rolls 2 inches wide you will need, as price varies with quantity. ADDRESS

**EDWIN C. TYSON**  
No. 1 Orchard Ave., Flora Dale, Pa., U.S.A.  
"EVERYTHING FOR THE ORCHARD"

**PENETROL**  
and  
**NICOTROL**

Manufactured by  
**KAY-FRIES CHEMICALS, Inc.**  
100 Madison Ave. New York City

**BAND YOUR APPLE TREES**  
**KILL CODLING MOTH**

Our experience has taught us how to chemically treat **TREE BANDS** that are guaranteed to kill the worms.

**BANDING** saves one or more spray applications—does away with stings—and kills thousands of worms that would live over winter. Costs less than 2 cents per tree.

Write for Circulars and Prices  
**EDWIN H. HOUSE** Saultuck, Mich.  
Remember we pay the freight.

PAGE 38

## ORCHARD SANITATION PRACTICES

(Continued from page 16)

caught in a canvas spread beneath the trees and the canvas with the larvae later destroyed. Chemical bands may then be applied to the trees during the summer to collect the larvae. Untreated bands may be used provided they are visited every 10 days during the summer to remove the trapped larvae. Research has revealed that bands on well-scraped trees will trap 45 to 55 per cent of the larvae, varying with the care with which the scraping and banding are done.

In old orchards where many decayed knot holes occur and where split branches and deep, inaccessible crotches are found, these places may be filled with a paste made by heating one-third alpha naphthylamine and two-thirds parawax, with hydrated lime added to this hot mixture till it is of the consistency of thick mush. This filler, if applied, warm, will render openings waterproof, will kill any larvae of the codling moth or other insects in such inaccessible places, and will remain in place for several years, preventing later entrance of larvae.

The use of such a crack filler is especially valuable in orchards which have a heavy codling moth population. Before a "crack filler" was developed many orchardists used wire gouges and knives to dig into inaccessible places to remove overwintering larvae. This was a laborious job.

The practice of carefully picking off and destroying all wormy apples found on the tree during the latter part of the first brood period (in June for southern Illinois and Indiana) and the removal and destruction of all dropped fruit from orchards of heavy infestation is spectacular in its results in that it at once brings about a noticeable reduction in codling moth attack. The numbers of worms in later broods are reduced, the numbers going into winter quarters are much less, and the resultant worm population is reduced for the next year. This operation is expensive but may, under certain conditions, be the means of producing a profitable crop.

Cultivation aids in the destruction of the plum curculio, codling moth, apple scab, and other insects and diseases. Such culture, however, should not be practiced every year on sloping or hilly orchards because it will result in severe sheet and gully erosion more damaging to the planting than the insects and diseases.

Orchard burners have been used to reduce the numbers of insects and diseases. These are implements which may be pushed about the orchard and

which consume fuel oil in generating heat. The generators are under a hood which directs the 1400 degrees of heat against the ground.

In our study of this operation all the leaves, sticks, rotten apples, paper, and all other litter were burned. The reduction in the number of the attempted entries in the fruit amounted to 35 or 40 per cent in our experiments, and the burning cost was about 40 cents per tree.

Burning must, however, be done under the most favorable conditions to obtain maximum results. The work is slow and must be performed during the short favorable period in the spring before the foliage appears. The ground should be dry and the wind blowing to prevent heat injury to the trees.

The Kansas Agricultural Experiment Station reported some reduction in apple scab through orchard burning but results of work at the Purdue University Agricultural Experiment Station fail to show this to be the case in every instance. Burning destroys the plum curculio, leaf hopper, apple flea weevil, and all other insects hibernating beneath the trees.

### • FRAME C. BROWN •

**AT THE** peak of his horticultural career, death claimed, on December 16, Frame C. Brown, prominent Worthington, Ohio, fruit grower. A heart attack was the cause of his death at 53 years of age.

Starting with unbroken land in 1912, Mr. Brown developed his 150-acre orchard into one of the best fruit farms in the Middle West. His operation was particularly noted for extensive roadside selling facilities and the manufacture of apple by-products.

Mr. Brown was a graduate of Yale University, Class of 1905, and was active in social and fraternal organizations in his community. He was a member of the Ohio State Horticultural Society and was in 1919 president of this group. Other memberships in horticultural societies held by Mr. Brown included New York, Indiana, Virginia and Michigan.



Frame C. Brown



## PREVENTING APPLE SCAB

(Continued from page 36)

should not be given undue consideration. Clean fruit with the highest possible finish is worthy of our utmost efforts even though its cost may be somewhat greater.

There is no reason why we should omit reference to a quite recent discovery by a well-known chemical firm, which presents definite indications that home production of wettable sulphur at relatively low cost is now practicable as well as possible for the orchard owner. It is a discovery of very great interest and significance. It is being demonstrated that as small a proportion as one part of dry lime-sulphur to four parts of pure, superfine dusting sulphur will render the latter readily wettable. This discovery may exert a far-reaching effect on future production of wettable sulphur preparations designed for fungicidal purposes.

After all is said and done the truth remains that timeliness and thoroughness in application of sprays are of the utmost importance. Foliage and fruit thrive best when protected by formulas as mild as possibly may be used and yet afford ample protection from harmful agencies. Orchardists must learn to adjust spray formulas and schedules to requirements of ever-varying seasons, to widely different topographical conditions under which their orchards are growing, and to special needs of many individual varieties.

In seasons in which apple scab is not troublesome and has been entirely eliminated by thorough spraying in the pre-bloom and petal-fall period, our summer or hot weather applications are composed wholly of a formula of 10-2½-100 proportions of lime and lead arsenate. Moreover, there are numerous excellent apple growers in Ohio who make a regular practice of this plan, providing they have soundly whipped apple scab during the early period of infection. Where bitter rot, apple blotch or Brooks spot are diseases to be reckoned with, the lime-lead spray is wholly inadequate.

### • CLYDE HOLLAND •

A heart attack claimed a prominent Ohio fruit grower on January 6, when Clyde Holland died at his home on the Bingham Orchards near Chardon, Ohio, which he had managed since 1932. For eight years Mr. Holland was an Ohio extension horticulturist. He was a graduate of the University of Delaware.

"Starking and Richard," says Dean H. L. Price of Virginia Polytechnic Institute, "are apple varieties that are here to stay. They are much superior to the old Delicious variety."

FEBRUARY, 1937

**T**HE sturdy Model "M" engine develops a maximum of 30.98 drawbar H.P. and 37.38 maximum belt H.P. Thus the Model "M" gives you more power for your money. But power in itself is only a partial explanation of the "M's" ability to come through in the tough spots. Power and weight are in proper **BALANCE**—that is why the "M" outperforms other tractors on steep hills. The "M" has weight enough to provide good traction—but no "excess baggage" to hold it back. Standard or wide tread models. New streamline orchard Model with fenders, low, easy-reach controls, and either top seat or comfortable rear seat, adjustable backrest. **FREE** catalog.

**TRACTORS—PLOWS—IMPLEMENTS**

- Streamline Design
- Light Weight
- More Power
- Shorter Turning
- Better Balance
- Four Speeds Forward
- Gasoline, Kerosene, Diesel, or Turbine

#### ALLIS-CHALMERS MFG. CO.

Dept. 16, Tractor Division, Milwaukee, Wis.

Gentlemen: Send **FREE** catalog on ☐ Model "M"; ☐ Model "WK-O" Oil Tractor. I farm \_\_\_\_\_ acres.

Name \_\_\_\_\_

Town \_\_\_\_\_

R.F.D. \_\_\_\_\_ State \_\_\_\_\_

## ALLIS-CHALMERS

TRACTOR DIVISION—MILWAUKEE, U. S. A.

**THIS BAND OF TREE TANGLEFOOT**

**EFFECTIVELY PROTECTS YOUR VINES AND TREES FROM ALL CLIMBING INSECTS**

Keep your fruit trees and grape vines free from destructive cutworms, cankerworms, tussock moth caterpillars, hop flea beetles, Fuller rose weevils, brown mites, red spiders, and ALL other climbing or creeping insects. Apply **TREE TANGLEFOOT** bands. Easy and simple. Endorsed by successful fruit growers everywhere. One application lasts 3 months or longer. Sold in leading Hardware and Drug Stores. Very economical.

Write for Our Interesting Booklet

**THE TANGLEFOOT CO. Grand Rapids, Mich.**

AMERICAN FRUIT GROWER



## AUDITORIUM

### HOTEL RATES

Now from \$1.50

Just think—you can now enjoy the comfort and luxury of the Auditorium Hotel for as little as \$1.50 a day for a room without private bath or from \$2.50 a day with private bath. A splendid location—every convenience—in an atmosphere of luxury at low cost.

MICHIGAN AVE AT CONGRESS

## CHICAGO

### SPRAYING, DUSTING AND FUMIGATING OF PLANTS

By A. Freeman Mason

A complete and up-to-date book on the control of insects and diseases by sprays, dusts and fumigants. The first part details the history of spraying, the principles underlying spraying practices, the composition and properties of insecticides and fungicides, how to select and use spraying machines, the principles of dusting and fumigating, and the composition and properties of dusts and fumigants. Separate chapters consider the pests of the various fruits and vegetables. Each chapter includes a key for diagnosing the troubles of the plant by means of a brief description of the causes and symptoms.

538 pages. Illustrated.

Sent postpaid on receipt of \$3.00.

**AMERICAN FRUIT GROWER**

1370 Ontario Street Cleveland, Ohio

## Send today for this Big SPRAYER Catalog—New, Free

No other sprayer ever built has the marvelous features of the new Friend Sprayer Line!

You should send for this new catalog right now—36 pages in colors—124 illustrations—telling all about the 27 different sizes and styles—to exactly fit your needs or your purse. Five gallons up to seventy gallons per minute! 400 to 1000 pounds pressure!

Learn about the 12 big reasons why Friend Sprayers are preferred—such vital factors as—fewest moving parts—fewest wearing parts—easiest adjustments—fewest places to oil and grease. It's all told in the catalog—distinctive, money-saving features, aggressive leadership; just why these are your best FRIENDS in the Sprayer field. Write today.

# FRIEND

MANUFACTURING COMPANY

25 East Avenue

Gasport,

New York

AMERICAN FRUIT GROWER

## • INSECT CLOSE-UPS •

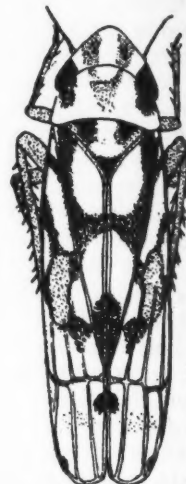
(Continued from page 20)

reached, a number of small, pale, yellowish, red-spotted, active insects are usually found on the underside of the leaves.

This pest is difficult to control because it feeds by sucking the sap and not by eating the leaves. The best control measure known is to spray or dust with nicotine. If Bordeaux is being used for grape diseases, nicotine sulphate is added to the spray at the rate of one pint to 100 gallons of spray. When used without Bordeaux three or four pounds of potash-fish oil must be added to each 100 gallons of water with the pint of nicotine. This spray is applied about the time the berries begin to touch or just before the first leafhoppers acquire wings. Care must be taken that the spray completely covers the underside of the leaves or control will not be obtained.

To prevent the leafhoppers from escaping the spray, a boom should be used which will apply spray to both sides of the leaves at the same time. It may also be necessary to make another application for the second generation of leafhoppers which is done just before the second set of young develop wings and while they are feeding on the underside of the leaves.

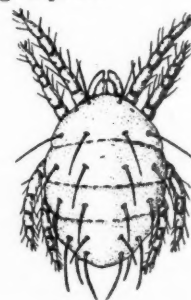
If dust is preferred to spray, two per cent nicotine in hydrated lime has been found effective. Use fresh, hot dust and apply at night when air is still.



Adult grape leafhopper

## RED MITES •

There are three types of these spider-like creatures which attack fruit trees, including the European red mite, clover mite and the common red spider. All fruit trees are subject to attack by these minute, eight-legged pests.



Adult female of European red mite

Fortunately, the mites are controlled by spraying during the spring dormant period with a three per cent oil emulsion. If a commercial oil is used, dilute according to the recommendations of the manufacturer.

### • CYRUS R. CROSBY •

Death came to Prof. Cyrus R. Crosby last month in Rochester, N. Y., on the night before he was to address the New York State Horticultural Society for his 30th year. As extension entomologist at Cornell University, Prof. Crosby had earned the high regard, as well as personal friendship, of fruit growers through years of helping them to fight insect pests.

The paper on "Insect Problems in 1936," prepared by Prof. Crosby, was read at the meeting by his assistant, Prof. J. A. Evans. Prof. Crosby may have had a premonition of his death. A few days before the meeting he gave Prof. Evans a copy, saying, "If anything happens to me, be sure to read this."



## ORIENTAL FRUIT MOTH

(Continued from page 18)

in 50-gallon barrels and placing them in convenient locations throughout the orchard. This method has the advantage of allowing more men to work, as a crew of men may work from each barrel. The time required for mixing the bait materials, however, is considerably longer, and it seems that the first method would be most practical. Each man filling the bait traps carries a bucket of solution and as many traps as the material will fill. They are filled three-fourths full of the glutrin-terpinyl acetate mixture and suspended in the tree as has been described. One trap should be hung in every other tree of every other row. This will require approximately 30 traps per acre.

The date of suspending the traps in the peach orchard varies considerably from year to year depending upon the weather conditions, but they should be put up in the spring early enough to capture the moths emerging from the overwintering larvae. Generally speaking, the traps should be suspended in the orchard about the time the peach trees are in full bloom. The bait traps should be refilled at the beginning of each brood of moths or approximately every four weeks until the peaches are harvested. During windy weather it may be necessary to refill them every two or three weeks.

The traps become filled with water during heavy rains and unless the solution is agitated the water will stand on top of the bait material. Therefore, it is a good practice to go over the traps within a few days after a hard rain and stir the solution in each trap. This is not absolutely necessary, but the water will decrease the efficiency of the traps and the maximum number of Oriental fruit moths will not be captured.

The cost of baiting a peach orchard with the glutrin-terpinyl acetate mixture is very inexpensive when oil cans are used as traps. The glutrin may be purchased for around 25 cents a gallon, and the terpinyl acetate for about \$1.50 a gallon. In other words, the bait materials will cost less than one-half cent per trap.

### Strawberry Crown Borer

Strawberry growers in the Paducah, Ky., region were warned of the dangers of crown borer attacks by W. W. Magill, extension horticulturist of the University of Kentucky, when he stated: "Every grower must be warned to take precautions against this pest. It is absolutely necessary that growers realize the dangers they face in permitting the spread of the crown borer. Control is obtained by moving the slips or young plants from old strawberry fields before the advent of warm weather in late winter. The plants should be carefully washed and cleaned before replanting."

FEBRUARY, 1937



## Thumbs down on Scab

PROTECT YOUR CROPS AGAINST SCAB with the proper spray or dust in the various important stages of growth. Nature will not wait—fungi grow as your trees develop. Therefore, watch the growth of your trees and at the proper stage be ready to spray or dust.

"MAGNETIC SPRAY" WETTABLE SULPHUR is widely used for scab and is the most effective wettable sulphur obtainable. It is 98.5% pure, mixes readily, stays in suspension and will not clog your spray lines.

"MAGNETIC" CATALYTIC SULPHUR—80% sulphur, is a safener and sticker to be added to lead arsenate—lime sulphur sprays. It blocks the usual damaging reaction and prevents black sludge which occurs when these two are combined. The high sulphur content alone helps control scab. MAGNETIC SPRAY CATALYTIC SULPHUR is also a safener for straight lime sulphur solution.

"ELECTRIC" SUPER ADHESIVE DUSTING SULPHUR—99.8% pure—an ideal dusting sulphur used by successful growers everywhere either alone or in combination with other materials.

### OTHER MAGNETIC PRODUCTS

Rotenone-Sulphur Dust  
Pyrethrum-Sulphur Dust

Cryolite-Sulphur Dust  
Cryolite-Sulphur Spray

## STAUFFER CHEMICAL COMPANY

420 Lexington Ave., New York City

Chicago, Ill.

Freeport, Texas



Stauffer Chemical Co., 420 Lex. Ave., N.Y.C.

Please send the following literature

"Magnetic Spray"  
Wettable Sulphur  
"Electric" Dusting  
Sulphur

"Magnetic" Catalytic  
Sulphur

I grow, \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

## TRI-TOX CODLING MOTH KNOCK OUT

A substitute for arsenate of lead. Saves washing fruit. A PROVEN CONTROL. Send for circular, prices.

TRI-TOX CHEMICAL COMPANY Washington, Indiana

## CHARACTER

Here, one instinctively feels those perfections of hospitality and service that have made The Bellevue famous . . . Rates Begin at \$3.50

## BELLEVUE STRATFORD

PHILADELPHIA

One of the few famous hotels in America

CLAUDE H. BENNETT, Gen. Mgr.

AMERICAN FRUIT GROWER

### BOLENS POWER HOE

Brings power gardening within reach of millions! Also larger, more powerful **Boleens Garden Tractors**—walking and riding models—to do plowing, harrowing, cultivating, spraying, mowing and other farm work on a small scale. Write

**GILSON-BOLENS MFG. CO.**  
18 Park St., Port Washington, Wis.

88¢

## ROOT ORCHARD DUSTERS

Are easily regulated for light and heavy applications. The high air velocity creates a magnetic charge in the material causing it to cling to foliage and branches. Root Orchard Dusters are portable and can be easily mounted on any truck or conveyance. They reduce your dusting costs and make the job easier and quicker. For catalog of complete line for orchard and crop dusting, write

The Root Manufacturing Co.

1011-1051 Power Avenue, Cleveland, Ohio

# STRAWBERRY PLANTS

## DEPENDABLE QUALITY



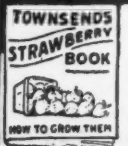
THIS TRADE MARK  
IS YOUR PROTECTION  
FOR TRUE-TO-NAME  
QUALITY PLANTS

## INCREASE! YOUR BERRY PROFITS

At No Extra Cost To You

For the past 36 years the name Townsend has represented all that is best in berry growing. It is the byword for True To Name Heavy Yielding Quality Plants. The largest berry growing associations in the country use Townsend's plants annually. Fruit growers and home gardeners in 48 states set Townsend's Select Strain Plants last year. They are bred for heavier yields, increasing your profits at no extra cost.

## FREE



## 40-Page BERRY BOOK

This Free Book is fully illustrated in colors and describes best money making varieties: Strawberries, Raspberries, Grapes, Blackberries, Fruit Trees, etc., and tells how World's largest growers of Strawberry Plants make plant selection and increase yields. Every Fruit Grower and Home Gardener should have this book. A Postal will bring your free copy.

E. W. Townsend Sons

13 VINE ST., SALISBURY, MARYLAND

# FRUIT TREES

Peaches, Pears, Apples, Plums, etc. Excellent stock. Write for catalog. Box "A," The Storrs & Harrison Company, 83 years at Painesville, Ohio.



## Maloney's

TREES - SHRUBS - VINES - ROSES

Have an extra fine root system which helps growth. Our catalog tells of the hardy, healthy, true-to-name stock grown in our 400 acre nurseries—gives planting directions—guarantees satisfaction—saves you money. 53 yrs. experience backs every item. See our rose values. Maloney Bros. Nursery Co., Inc., 47 Main St., Dansville, N.Y.

SEND FOR FREE CATALOG

# BOYSENBERRY!

World's largest vineberry. Delicious. Hardy. Immense profit if planted now. Free pictorial pamphlet giving quantity price, affidavit making \$311 from 100 plants within 15 months, detail relative free magazine giving continual cultural instructions. Interest your orchard. Plants prepaid from original acreage 10—\$2.00, 100—\$12.00.

Rancho Verde, Mentone, Calif., Hampton, Va., or Ardmore, Okla.

## SUPERIOR FRUIT TREES

1937 TREE Catalog FREE. Every Fruit Grower and Home Owner should have a FREE copy of our big 62-page illustrated Catalog. Faithfully describes the Best Fruits and Ornamentals for farm, suburban and city plantings, at money-saving prices.

Write Today **Kavisons' NURSERIES, INC.** Serving PLANTERS For 53 Years Berlin, Maryland

## STRAWBERRIES

**PAY** Allen's 1937 Berry-Book. Describes Best Methods, Plants, Varieties: Fairfax, Dorsett, Catskill, etc. **COPY FREE WRITE TODAY** THE W. F. ALLEN CO. 284 Evergreen Ave., Salisbury, Md.

**BLACK & ENGLISH WALNUT** Trees, Filbert, Northern Pecan, Blight Resistant Chestnut, and others. All adaptable to northern climates through years of selective cultivation. Send for catalog. **J. F. JONES NURSERIES** Dept. A-27, Lancaster, Pa. **JF JONES NURSERIES**

## STATE NEWS

(Continued from page 37)

rapidly increasing popularity of Pyrethrum in Circular 59. Title: "Pyrethrum in Tennessee." It's a new cash crop, adapted to well-drained tillable soils from 1,000 to 1,200 feet elevation. Extensive use of non-poisonous sprays and dusts has greatly increased the pyrethrum crop's value.

According to County Agent H. J. Childress, 800 Putnam County farmers have planted over 12,000 acres of lespedeza this year. This is the Tennessee farmer's response to the Government's offer to help him help himself. —A. N. PRATT, State Horticulturist, Nashville.

PENNSYLVANIA—Figures assembled by the extension pomologists from demonstrations conducted in 1935 and 1936 throughout the State indicate the production of the principal strawberry varieties to be in the following order of decreasing yields: Aberdeen, Howard 17, Catskill, Clermont, Dorsett, Fairfax, William Belt, Corsican, and Big Joe.

For commercial purposes, Howard 17, Catskill, Dorsett, and Corsican will be found the most satisfactory, while in the case of berries for home use, Howard 17, Dorsett, Corsican, Catskill, and Fairfax will be most satisfactory, say the extension men.

Disbudding or the selection of well-located apple buds to form some of the desired scaffold branches, removing all others, does not produce as good trees as desired with several of our standard varieties, particularly those which tend to make narrow crotches. We still have a lot to learn about training young fruit trees.—R. H. SUDDS, Sec'y, State College.

CALIFORNIA—Careening up the graph to new tops unseen since 1930, the California-Arizona citrus industry showed returns in 1936 in excess of \$111,750,000, a gain over 1935 of \$14,250,000, according to the annual report of Paul S. Armstrong, general manager of the California Fruit Growers Exchange.

Secret of this Mumbo Jumbo over the market: \$1,478,085 spent for advertising and trade work. Over \$23,000,000 have been placed in the lap of the God of Advertising since 1907. Advertising appropriations for 1937 have been materially increased!

C. C. Teague was elected president of the 45-year-old Exchange, made up of 14,000 citrus growers, for the 17th consecutive year.

MINNESOTA—Annual list of fruits recommended for Minnesota planting, prepared by State Horticultural Society: Early apple Beacon and new plum Ember (Minnesota Fruit Breeding Farm productions) added this year to list of varieties recommended for trial. Wayzata strawberry added to list for planting, this new variety formerly being on trial list. Gem strawberry added to trial list, and dwarf cherry-plum Tom Thumb added to recommended list for northern Minnesota. Moore's Early grape dropped from list—it has been superseded by improved varieties. Interested growers may obtain circular free of charge.—J. D. WINTER, Sec'y, St. Paul.

## COMING MEETINGS

Feb. 3-5—Idaho State Horticultural Association 42nd annual convention, Hotel Owyhee, Boise.—W. H. Wicks, Sec'y, Boise.

Feb. 3-5—Illinois State Horticultural Society annual meeting, Illinois Fruit Exchange Bldg., Carbondale.—Joe B. Hale, Sec'y, Salem.

Feb. 10-11—West Virginia Horticultural Society annual convention, Martinsburg.—Carroll R. Miller, Sec'y, Martinsburg.

Feb. 20—Rhode Island Fruit Growers Association annual meeting, Biltmore Hotel, Providence.—E. P. Christopher, Sec'y, Kingston.

AMERICAN FRUIT GROWER

# SCARFF'S FRUITS



## Finest Varieties Ornamentals

Boysenberries, most delicious of all Bramble Fruits. Black Beauty—Newburg—outstanding new Raspberries. Distributors of "Registered Black Raspberries" grown by Ohio Small Fruit Imp. Ass'n. Large Red Lake Currants and Poorman Gooseberries. New All Bearing Cherry, Lodi and Red Rome Apple, Stanley Plum and many other (new and standard) varieties outstanding for Quality and Profit.

Ornamental Trees for lawn planting—Dogwood, Globe Locust & Jap. Cherries, Beautiful New Butterfly Bush, Best of the New Patented Roses. Our new FREE catalog describes them all. Write for your copy today.

W. N. SCARFF'S SONS, Box 131 New Carlisle, Ohio



## MAKE MONEY with BEES

Send for free booklet

"Does Beekeeping Pay?" 30 interesting

letters, illustrated,

64 pg. catalog, Easy

to start. "Gleanings in Bee Culture"

64-pg. monthly magazine. Trial offer,

6 months only, 25c. good for 90

days THE A. I. ROOT COMPANY

Box H-41 Medina, Ohio



## TREES PRUNED EASILY

when you specify BARTLETT

EQUIPMENT; Compound Lever

Supplies, and Tree Paint.

Write for free illustrated catalogue showing complete line.

BARTLETT MANUFACTURING CO.

3044 E. Grand Blvd.

Detroit, Michigan

## Better Grafting Wax

We make both the Hand Wax and Brush Wax. Michigan State College formulas followed exactly. Only high grade materials used, and they are mixed thoroughly. Dealers wanted. If interested, ask for free booklet "Bees and Fruit" by E. R. Root. Also ask for pricelist.

M. H. HUNT & SON

511 No. Cedar St.

Lansing, Mich.

GRAFTWAX—TREE HEALANT Heals pruned stubs, Arrests—cures tree diseases, blights, wounds. Water proof, adhesive. Excels in grafting. Hastens union of stock and scion. SWEETENED ON COLD. Scions dipped in melted Graftwax keep indefinitely, prolonging grafting season. Curative tree cavity filler. GRAFTWAX SEALS AND HEALS. 12 oz. can, 50c. 2 to 6 lbs., 50c lb. 12 lbs., \$5.00 Postpaid. Free Sample. CLARION DEVELOPMENT COMPANY, INC., Dept. A, Clarion, Pa.

## PRUNING EQUIPMENT

GRAFTING WAX GRAFTING COMPOUND

Exceptional assortment of Pruning Shears and Saws.

JOHN BACON INC., Gasport, N. Y.

"Everything for the Fruit Grower."



## Beautiful FALSE TEETH

We guarantee to fit your mouth with beautiful false teeth or refund your money. New low prices save you money.

60 DAY TRIAL FREE SEND NO MONEY

UNITED STATES DENTAL COMPANY

Dept. 105—1557 Milwaukee Avenue Chicago

## NEW FARM RADIO—\$7.95

Get Coast-to-Coast. 30 Days Trial.

COMPLETE. Airplane Dial. 5-Tube Power. Send \$1.00

or Catalog FREE. ESCO, B-2227, Kansas City, Mo.

## KINKADE GARDEN TRACTOR

and Power Lawnmower

A Practical, Power Plow and Cultivator

for Gardeners, Suburbanites, Florists,

Truckers, Nurserymen, Fruit Growers

Low Prices - Easy Terms

American Farm Machine Co.

1105 33rd Av. SE, Minneapolis, Minn.

## NEW SUPER-QUALITY KITSELMAN FENCE

Heavier, tougher pure zinc galvanizing. Stronger, tougher Copper-Bearing Steel. Same low Factory Prices.

WE PAY FREIGHT 100 styles and heights Farm, Poultry and Lawn

Fence; Steel Posts, Gates, Barb Wire,

Paints, Roofing. Write today.

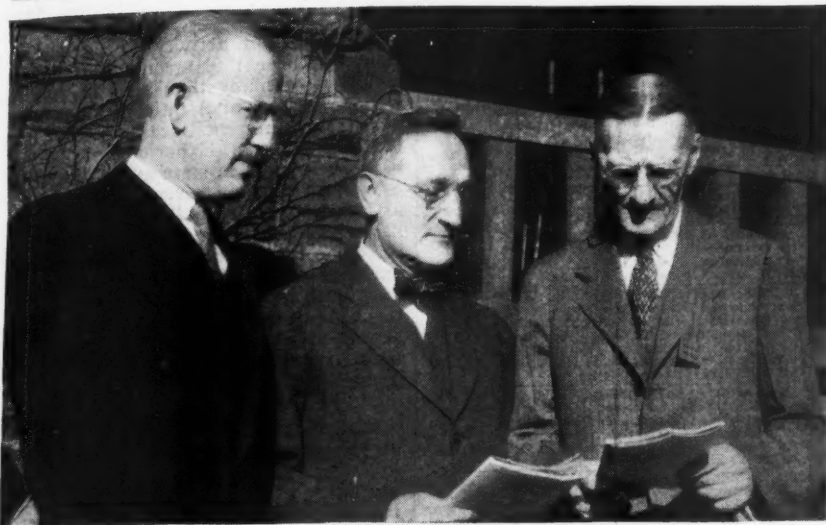
KITSELMAN BROTHERS

Box 206 Muncie, Indiana

FEBRUARY, 1937



# Camera!



"Let's go to this lecture," says Carland J. Hopkins, center, Virginia grower, to H. C. C. Miles, right, secretary of Connecticut Pomological Society and treasurer of American Pomological Society, while Paul Stark of Louisiana, Mo., looks on. Many eminent specialists and prominent fruit growers attended the joint convention of A.P.S. and Virginia State Horticultural Society at Roanoke.



A. H. Teske, left, Virginia extension horticulturist, receives an apple advertising folder from Carroll R. Miller, secretary-manager of Appalachian Apples, Inc.



J. C. Clarkson, center, Virginia fruit grower, and his daughter, Virginia, pause before American Fruit Grower camera lens with H. Carrington Jordan who operates the High Peak Orchards at Monroe, Va.

## Boysenberry

**New and Bigger PROFITS**

We are delighted that we can now offer you this great berry, no matter where you live, because last winter it withstood 20 degrees below zero. Also it fruited last summer when other berries in the drought area failed. That's good news because now you, too, can cash in on this new berry market. Our own crop sold readily at nearly double the price received from other varieties. Gross returns ran from \$900 to \$1760 per acre.

A row of Boysenberries will be the joy of your garden. An acre will return as much cash as many farms. Many berries are two inches long and one and one-half inches through, and have a flavor that brings customers back.

An interesting booklet that tells the entire story and gives many helpful ideas on berry growing in general is yours absolutely free, but we suggest you ask for it today.

Please mention whether interested for commercial or home use.

**KNOTT'S BERRY PLACE**  
BUENA PARK CALIFORNIA

## Sungold

**NEW HARDY PEACH from AMERICA'S LARGEST Direct to You NURSERIES**

**Freestone! Hardest Ever Grown!**  
For 15 years stood 10 to 22 below zero. Never missed full crop. Yellow, firm flesh. Wonderful size and beauty. Simply delicious. Sold only by Inter-State.

**FREE! AMERICA'S MOST BEAUTIFUL NURSERY AND SEED CATALOG!**  
Send for Inter-State's Free Nursery and Seed book. Special low prices in Fruit trees. Tested Seeds guaranteed to grow; flowers, World's Fair Roses, Shrubs, etc. First quality guaranteed stock from America's largest direct-to-you nurseries. Write today.

**INTER-STATE NURSERIES**  
E. L. Street  
HAMBURG, IOWA

## FREE

**TOOL MANUAL**  
How to Set and File Your Saws

**DISSTON SAW AND FILE MANUAL**

**200 ILLUSTRATIONS**  
Disston makes and sharpens saws for all the world. You get Disston experience free, in this Manual! Step by step, plain words and clear pictures show you how to Joint a Saw, Shape the Teeth, Set, File. Get this Disston Saw Manual and you yourself can keep your saws sharp. Another Valuable Book, FREE—if checked, "Disston Pruning Guide"; for garden, orchard, vineyard.

-----MAIL COUPON TODAY-----  
**Henry Disston & Sons, Inc.**  
**267 Tacony, Philadelphia**  
Send me free ☐ Saw Manual. ☐ Pruning Guide.  
(Check one or both, as wanted)

Name.....  
Address.....

## OPPORTUNITY ADS

Only 15c a Word—CASH WITH ORDER  
Count each initial and whole number as one word  
ADDRESS: AMERICAN FRUIT GROWER,  
1370 Ontario Street, Cleveland, Ohio

### ANTIQUES WANTED

OLD CHINA, GLASS, AND GENERAL ANTIQUES OF all kinds and materials wanted. Send full description and prices. Cash value paid for all articles selected. Bank references. ANTIQUE DISTRIBUTORS, 1370 Ontario Street, Cleveland, Ohio.

### BABY CHICKS

AS WORLD'S LARGEST CHICK PRODUCERS, WE can save you money. Big Catalog Free. COLONIAL POULTRY FARMS, Box 430, Pleasant Hill, Missouri.

### BEEES

BEEES—GOOD SIDE LINE, PLEASURE, PROFIT. Send \$1.00 for 190 page book, "First Lessons in Beekeeping," and one year subscription. Catalog free. AMERICAN BEE JOURNAL, Box G, Hamilton, Illinois.

PACKAGE BEES FOR POLLINATION. TWO-POUND package with queen \$2.45. Three-pound package \$3.15. Four-pound package \$3.85. Also cypress hives. Write for catalog. STOVER APIARIES, Mayhew, Mississippi.

BEEES FOR CROSS POLLINIZING FRUIT BLOOM OR raising honey. Write for prices. D. C. JACKSON, Funston, Georgia.

"2, 3 AND 5-POUND SWARMS. MILLER BROTHERS, Three Rivers, Texas.

### BERRY PLANTS

STRAWBERRIES—RASPBERRIES—GRAPES AND other berry plants are listed in Townsend's new catalogue. Write today for free copy. Tells how World's Largest Growers strawberry plants make plant selections for larger yields. Fully describes best paying varieties and gives complete growing methods. TOWNSEND'S NURSERIES, Dept. 20, Salisbury, Maryland.

BOYSENBERRY, ALSO FIRST RELEASE OF NEW FRANKLIN D. AND NECTABERRY PLANTS, which yielded for us last year twice the fruit of Boysenberry. Thornless Loganberry, Lloyd George Raspberry and others. BENEDICT RANCHO, 1027 Deana Road, El Monte, California.

STRAWBERRY PLANTS. A MILLION PREMIER; in quantity \$3.00 per thousand. Catskill, Dorsett, Fairfax and all standard kinds. Free catalogue. J. W. JONES & SON, Franklin, Virginia.

CERTIFIED BLAKEMORE, AROMA STRAWBERRIES: \$2.75 thousand. Dorsett, Fairfax: \$3.75. SHELBY PLANT FARMS, Memphis, Tennessee.

STRAWBERRY PLANTS—BLAKEMORE, AROMA, Klondyke, Missionary and others. JOHN LIGHTFOOT, Brentwood, Tennessee.

CURRENT PLANTS: REASONABLE, LLOYD BROTHER, Ludington, Michigan.

### BUSINESS OPPORTUNITIES

MONEY MAKING OPPORTUNITIES FOR THE FARMER and his family. Earnings easily doubled. Amazing particulars free. ORBS FARM SERVICE, 2501 Glenmary, Louisville, Kentucky.

### CIDER MILLS

CIDER PRESSES, GRATERS, PUMPS, SCREENS, filters, supplies. Booklet F free tells how one man made \$400.00 with roadside mill and how to keep cider sweet and make vinegar quickly. PALMER BROS., Cos Cob, Connecticut.

### CROTALARIA SEED

CROTALARIA SPECTABILIS SEED: HEAVIEST LEGUME cover crop. Reserve now. GRAND ISLAND NURSERIES, Eustis, Florida.

### DAIRY GOATS

DAIRY GOAT JOURNAL, DEPT. 703, FAIRBURY, Nebr. Monthly Magazine, 50c yearly. Introductory 3 months 10c.

### FOR RENT

COMBINATION HALF SECTION APPLE ORCHARD and Stock Farm. O. H. THOLECKE, North Platte, Nebraska.

### FOR SALE

CHERRY HILL FRUIT FARM—450 ACRES, 12 MI. East of Newark, Ohio. 10-room, 6-room and two 5-room houses, free gas. 36x64 bank barn, slate roof. Double corn crib and granary. Two implement storage buildings. Blacksmith and cooper shop. Concrete storage buildings. Large poultry house.

### APPLE TREES:

Baldwin	530
Red and Yellow Delicious	180
Duchess of Oldenburg	135
Grimes Golden	130
Jonathans	280
McIntosh	100
Northern Spy	160
Rome Beauty	550
Stark	445
Sutton Beauty	200
Stayman Winesap	275
Wealthy	280
York Imperial	70
Yellow Transparent	150
Miscellaneous	315
TOTAL	3800 trees

Two Friend Spray outfits. 200 and 300 gallons. Misc. lot of farm tools. For further information address A. S. STEPHAN, 27½ West Main Street, Newark, Ohio.

120 ACRE APPLE AND PEACH ORCHARD, 14 YEARS old, on main Highway Reading to Philadelphia, near Reading. Excellent condition. Best commercial varieties. Stone dwelling with bath and conveniences. Two barns. Ample machinery, including Four Ton York Refrigeration Unit uninstalled. Price \$25,000 including machinery. (Less than cost of replacing buildings.) Terms to suit. Apply 605 COLONIAL TRUST BUILDING, Reading, Pennsylvania.

### HOSIERY

SAVE! BEAUTIFUL FULLFASHIONED HOSIERY 3 Pcs. \$1.00 (Pr. 39c.) DIRECTCO, AF221W Broad, Savannah, Georgia.

### NURSERY STOCK

FRUIT TREES AND BERRY PLANTS FOR SPRING Planting, 200,000 Peach Trees, 150,000 Apple Trees, one and two year old. Pear, Plum, Cherry, Nut Trees of all kinds. Millions of Strawberry, Raspberry, Blackberry, Asparagus Plants, and Grape Vines. Best new and old varieties. Evergreens, Shade Trees, Shrubbery and Roses. We offer one of the largest and most complete lines of Nursery Stock in the East, sold direct to the planters at comparatively low prices. Send today for our free catalog. BOUNTIFUL RIDGE NURSERIES, Box H, Princess Anne, Maryland.

FRUIT TREES—IN A LARGE ASSORTMENT OF sizes and varieties, including the New Double Red Varieties of Apple. We offer for Spring Delivery 200,000 each Apple and Peach, as well as a complete line of Small Fruits and Ornamentals. Write for a Free Copy of our 44-Page Catalogue and New Price List. WAYNESBORO NURSERIES, Inc., Waynesboro, Virginia.

FRUIT TREES: OUR OWN GROWING: WHOLESALE prices: choice one and two year trees; well branched, heavy root stocks excellent for re-sets on new orchards. Berry plants, Grape vines, Asparagus roots. Write for price and variety list. Limited supply well matured field selected Reids Yellow Dent Seed Corn. \$3.00 per bushel. DAVIS FARM AND NURSERY, Anna, Illinois.

FREE! AMERICA'S MOST BEAUTIFUL NURSERY and Seed Book. Full natural colors. Greater values, better service and a sincere desire and effort to please you has made us America's largest Direct-To-You Nurseries. Guaranteed Stock. Low prices. Write INTER-STATE NURSERIES, 29 E. Street, Hamburg, Iowa.

CANDOKA FUZZLESS PEACH. U. S. PLANT PATENT No. 51. Brings Highest Prices. Extraordinary Shipper. Excellent Flavor. Beautiful—Red Gold Color. Trees grown in Illinois. Write for Prices. THE VIENNA NURSERY, Vienna, Illinois.

"PEACH AND APPLE TREES" DIRECT TO PLANTERS. Yellow and Blood Red Delicious. Grapevines. Pears, plums, cherries, nuts, berries, pecans. Also ornamentals. Free Catalog. TENNESSEE NURSERY COMPANY, Box 101, Cleveland, Tennessee.

WHOLE ROOT APPLE GRAFTS. RED STAYMAN. Red Delicious, Yellow Delicious, Red Rome Beauty, and other varieties. JONES NURSERY, Woodlawn, Virginia. DOUBLE RED JONATHAN, DOUBLE RED DELICIOUS, Golden Delicious, Black Eagle Cherry. Reduced Prices. Free AF Catalog. GOLDEN EAGLE NURSERY, Golden Eagle, Illinois.

HARDY APPLE AND PEACH TREES. SEEDLINGS and Root Grafts. Write us. JONES NURSERY COMPANY, Woodlawn, Virginia.

BUY DIRECT. SAVE MONEY. COLOR CATALOG free. MINNESOTA FRUIT GROWERS, 784 Eustis, St. Paul, Minnesota.

APPLE, PEAR GRAFTS MADE TO ORDER. SEEDLINGS. Grafting supplies. WHITFORD NURSERY, Farina, Illinois.

NEW HARDY VARIETIES! PEACH TREES. CATALOG free. MARKHAM FRUIT BREEDER, Kentia, Illinois. VIRGINIA SCIONS \$5.00 FOR 100 TWELVE INCHES long. JANSENS NURSERY, Ames, Iowa.

### ORCHARD SUPPLIES

40 USED SPRAYERS, ENGINES, PUMPS, DUSTERS, Other Equipment. CORY ORCHARDS, Cory, Indiana.

### PATENTS

National Trade Mark Company  
Munsey Building  
Washington, D. C.  
Trade Mark Specialists

PATENTS. LOW COST. BOOK AND ADVICE FREE. L. F. RANDOLPH, Dept. 568-A, Washington, D. C.

### PHOTO FINISHING

ROLL FILM DEVELOPED AND PRINTED INCLUDING Two Beautiful Double Weight Olive Tone Enlargements Free. 25c coin. UNITED PHOTO SERVICE, La Crosse, Wisconsin.

FILMS DEVELOPED ANY SIZE, 25c COIN, INCLUDING two enlargements. CENTURY PHOTO SERVICE, Box 829, La Crosse, Wisconsin.

### PLANTS FOR SALE

VEGETABLE AND FLOWER PLANTS—GET AN EARLY start with your garden by setting our hardy plants. Cabbage, Onion, Tomato, Lettuce, Pepper, Potato Plants. Also Annual Flower Plants. Write for Plant Catalog. PIEDMONT PLANT CO., Albany, Georgia.

### POROUS IRRIGATION HOSE

IRRIGATION PAYS—WRITE ABOUT POROUS HOSE Irrigating. B. & B. IRRIGATING SYSTEM, Port Clinton, Ohio.

### WIND LIGHT PLANT

BUILD WIND LIGHT PLANT FROM AUTOMOBILE generator. Complete plans and catalog 10c. 50 other generator changes. LEYMAN MANUFACTURING, 1463 Lake, Minneapolis, Minnesota.

### SITUATIONS WANTED

ORCHARD MANAGER DESIRES POSITION. ARTHUR W. BURRILL, Lorane, Pennsylvania.

EXPERIENCED ORCHARD MAN AND TREE PROPAGATOR. HOWARD MARTIN, Princeton, Illinois.

### SPRAY MATERIALS

TRI-TOX CODLING MOTH KNOCK OUT. A SUBSTITUTE for arsenate of lead. Saves washing fruit. A proven control. Send for circular, prices. TRI-TOX CHEMICAL COMPANY, Washington, Indiana.

### TREE SCRAPERS

COWL TREE SCRAPER. THREE-EDGE STEEL blade curved to fit tree and limb. Quickly prepares trees for bands. Price \$1.45 delivered. FRUIT PACKING EQUIPMENT COMPANY, Swoope, Virginia.

## Status of Work With Blight Resistant Chestnuts

AT the annual meeting of the Northern Nut Growers' Association, R. B. Clapper and G. F. Gravatt of the U.S.D.A. discussed the Department's work with blight resistant chestnuts.

An important activity of the Department has been the introduction and distribution of many thousands of trees of various strains of Asiatic chestnuts coming from different localities in China, Korea and Japan. Experimental plantings have been made in state and national forests in an attempt to replace the chestnut as a forest tree. Small orchard plantings have been made in various places with the hope that among them will be found varieties which will combine blight resistance with good horticultural characteristics. Many were planted by the Soil Conservation Service, the Biological Survey made other plantings as a source of game food, and plantings have also been made by the Tennessee Valley Authority.

Many of these plantings may eventually serve as sources of seed for future plantings for forest, game, and ornamental purposes, as well as stocks for propagating selected varieties. Distribution of trees by the Department is now being reduced as commercial nurserymen and seedsmen are offering Asiatic chestnut seeds and seedlings and some state game departments and forest departments are now interested in growing chestnuts for distribution.

The Department is selecting and breeding chestnuts for resistance to twig blight and the Phytophthora root disease. The Japanese and the Chinese hairy chestnuts are very resistant to the latter disease which has destroyed many American and European chestnuts. The most promising orchard chestnut species, Castanea mollissima, the Chinese hairy chestnut, is very resistant to blight as well as to root disease.

Considerable work is being done in the hybridization of the various chestnut species and varieties. Since 1925 about 3000 controlled first generation hybrids have been produced. Some second generation hybrids are also being obtained. Many species and varieties of chestnuts and chinquapins are being grown at Bell, Md., for hybridizing purposes. The Asiatic species which have been hybridized among themselves as well as with the American chestnut and chinquapins are selected varieties and strains of Castanea mollissima, C. Henryi, C. sequinii and C. crenata, including varieties of Japanese forest chestnut and the Japanese cultivated varieties of orchard chestnut.

Nut growers, farmers, foresters, and game conservationists will find it most worth while to follow this interesting and valuable project of the Department of Agriculture. Eventually, if adequately supported and prosecuted with vigor, it may result in the production of a fair substitute for the now rapidly disappearing American chestnut. While the possibility of natural chestnut forests is very remote, we may reasonably expect to hope for chestnut varieties in the future that will at least be as easy to grow as our other tree fruits and possibly thrive under somewhat more adverse conditions.—G. L. SLATE, Sec'y, Northern Nut Growers Ass'n., Geneva, N. Y.

Interest has recently been aroused in the weed known as Devil's Shoestring. It grows wild in the South and contains a toxic substance similar to that found in derris root. The cultivation of this weed for use of the toxic materials in insecticides is developing rapidly.



# NEW

- Spraying and Irrigation Valve
- Dieselectric Plant
- Handy Power Duster

## By HANDY ANDY

It's getting so it keeps a fellow busy just keeping up with all the new machines and devices intended to fix it so he doesn't have to work so hard himself. Sort of looks as though the inventor-fellows were fixing to make fruit growing automatic and fool-proof just as soon as possible. It's mighty interesting, though, to hear about the new things that save a man hard work, time and money. As fast as I hear about them, I'll pass the information on in these columns every month. If you hear or see something you think worth while, I wish you'd drop me a line about it and a clipping or picture if you can. And ask me for any information you want. Just address Handy Andy, American Fruit Grower, 1370 Ontario Street, Cleveland, Ohio. Here are some things I've just heard about this month:

### NEW ANGLE VALVE •

Leaky, broken valves always mean trouble, especially when spraying with high pressures. Thus, interest is aroused by any valve that reduces the number of joints which may cause leaking. The new angle valve shown here has a three-quarter-inch male inlet instead of a

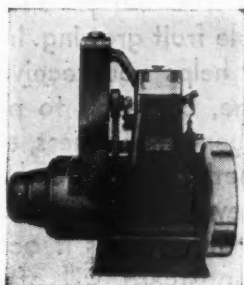


three-quarter-inch female inlet. This eliminates use of the nipple. Seat washers are renewable at a small cost. The valve is adapted for use on sprayers, stationary sprayer outfits and irrigation systems.

### DIESELECTRICITY •

Contrast the compact home electricity outfit shown with bulky six-volt units previously used. This plant stands only 36 inches from the base and is powered with a Diesel engine.

is well known. The plant delivers 110 volts of AC and DC current and is fully enclosed. Manual or remote control starting is optional. The electric output is ample for operating electric motors in the packing house, work shop and all household appliances.



### HANDY POWER DUSTER •

There is a new handy power duster just introduced that certainly is the answer to the universal call for a small, low-priced power duster. Types and sizes of this new duster will include a 2-Man carry unit for greenhouses, tobacco warehouses, and mushroom houses. There is also a special Greenhouse Unit mounted on pneumatic tires and a 2-Wheel cart model for field crop use—4 or 6 row.

## International Exposition

Recent announcement has been made that the Second Annual International Horticultural Exposition will be held in the International Amphitheatre at Chicago, September 18-26, 1937. Plans for the 1937 show include exhibitions from foreign countries and an expansion of domestic displays.

## A Promise

(Continued from page 7)

placement parts so that the fruit grower can care for breakdowns in a relatively short time.

Nor are our scientists, experts and inventors content to rest, as is evidenced by steam sprayer experimentation and the perfection of present types. There are good things still to come from the Adversity of ever-recurring spraying problems, good things that promise still greater progress in fruit growing.

Necessity will continue to be the mother of invention, and that is why it is so fitting that on the front of the spray calendar issued by the Michigan Agricultural Experiment Station, there appears an illustration of a modern sprayer and beneath it these words:

"Adequate equipment is of major importance in the fight against orchard pests."

AMERICAN FRUIT GROWER



The economy of Case tractors is catching on all over the country. Whether your work calls for the Model CO grove tractor, the CV vineyard special, or the CC row crop, you can count on the same three-fold thrift.

Case burns whatever fuel makes the most out of your fuel dollar, whether it be furnace oil, distillate, gasoline or kerosene—any fuel fit for any practical fruit tractor. Best of all, Case tractors last longer with less upkeep . . . give you the lowest total power cost.

See your Case dealer soon. Start now to cash in with Case's triple savings—low first cost, low fuel cost, low upkeep cost. See the difference in Case implements, too. Write for free book, "Money Ahead" to the J. I. CASE CO., Dept. B-12, Racine, Wis. A penny postal will do.

# CASE

STEEL PLOW BUILDERS SINCE 1837

Case Centennial orchard plow. Clearance to handle heavy cover crops at any depth; high-speed bottoms to scour and cover; extra high, quick-acting lift.



Case Subsoil Tiller with power-lift and crankshaft adjustment. Convertible to 3 or 1 standards.

# SUCCESSFUL ORCHARDS

● A "ROUND TABLE" PAGE FOR EVERY GROWER ●

## FENCING TO PREVENT DEER INVASION

**C**OMMENTING on the item in the December Successful Orchards section concerning the practice of D. Walker Cheney of the Cheney Orchards, Massachusetts, in fencing each peach tree to forestall damage from deer, Fred Lee-master of Anderson, Ind., says:

"I think it would have paid Mr. Cheney to put a fence around the entire field of peach trees. I have allowed a distance of 20 feet between the fence and the first row of trees around the entire field so as not to have the branches too close to the fence. I have left 20 feet between the rows of trees each way. I used a basis of 10 acres which is 40 rods square or 66 feet. If it is 660 feet long and trees are 20 feet apart there would be 33 trees each way. If you allow one tree on each side and end it would be 31 trees square which would be a total of 961 trees in all.

"This number of trees individually fenced at a cost of 65 cents each, as was done by Mr. Cheney, would amount to \$624.65. To fence the entire field, with the field 40 rods square or a perimeter of 160 rods, it would cost 60 cents per rod for fencing and 40 cents per rod for posts or a total cost of \$1 per rod or \$160 for the entire job."

## CHECKING SPRAYER NOW SAVES TROUBLE LATER

**S**OME important points to watch when checking over the sprayer for dormant and early spring spraying are stressed in the following remarks by I. T. Cushing, orchard manager of the Neal Fruit Farm in Ohio.

"I believe that careful checking of the sprayer during the winter when we have some extra time usually saves a lot of trouble when we are ready to go in the spring. Since the motor is the powerhouse of the sprayer we usually start on this. The first thing we do is to overhaul pointers and then change spark plugs. When a sprayer must be used almost constantly during the busy season over our 250 acres we can't afford to have trouble from the spark plugs, so we change them every year just to make sure they're all right.

"We can usually tell from the past season's operations if the motor valves need grinding. If the motor is sluggish we usually grind the valves, since we find that nothing is worse than having a sluggish motor when pressure is needed.

"When chemicals get past the screen you can look for trouble. Because of this, and for protecting the pump, we renew the screens every year. Another source of trouble is the packing gland on the agitators. We tighten these carefully when checking over the sprayer. All valves that have shown a tendency to leak are renewed, since a leaky valve will cause loss of valuable pressure and materials. Another thing to watch so the right pressure is maintained are pressure regulators. These are carefully checked and the necessary repairs or replacements are made each year."

PAGE 46

This page is a place for growers to get together and exchange experiences and ideas. The beginner, as well as the veteran, will find here many practical suggestions for better and more profitable fruit growing. In return for the helps you receive from this page, be ready to pass on, for the benefit of others, any new idea, method or procedure you have developed or run across. Just jot it down as it occurs to you (a postcard will often do) and mail it to the "ROUND TABLE EDITOR," AMERICAN FRUIT GROWER. Don't worry about fancy writing. What the readers of this page want are practical pointers—that are to the point.



Valve check-up is a practice recommended by I. T. Cushing in his article on this page. Many growers are interested in the new type angle valve with which a nipple is not needed.

AMERICAN FRUIT GROWER

## DISCUSSES RABBIT PROTECTION METHOD

**F**OR the grower who has a relatively small number of trees to protect from rabbits, the following "Round Table" contribution of Dana B. Vincent of Pennsylvania will be of interest.

"I have from time to time read of different methods for protecting small fruit trees from injury by rabbits but have never read of the simple method I use although it is presumed many make use of it.

"I save all old burlap bags and these I cut into strips about six inches wide, the length of the bag being about right. I wrap the trunk of the tree commencing at the bottom and fastening at the top with a thin wire about eight inches long. If there are branches near the ground I wrap them separately with scraps of burlap."

## MORE SOLUTIONS FOR THE DEER PROBLEM

**F**ROM Charles R. Skinner of New Jersey comes some ideas on keeping deer out of orchards.

"Comments on the 'Round Table' page in reference to the damage done by deer to the orchard in Massachusetts interest me and I would like to offer a few suggestions that we have found practical under similar conditions in New Jersey.

"If a strong string or wire is stretched around the field about 30 inches high and strips of rags tied at intervals of not more than four feet apart, the rags hanging down at least one foot, you will find that the deer will neither jump nor crawl under. This can be done at a very small cost and has proved very successful.

"Another method is to tack a mouse trap on a lath in such a way that a thread can be attached to the trigger. This is stuck in the ground and a spool of thread run out in a straight line, being kept off the ground by hanging it on sticks about every 25 feet apart. This thread can be run for 50 yards and is placed if possible where the deer enter the field.

"A torpedo, such as is sold on the Fourth of July, is fastened on the trap by a rubber band in such a way that when the trap is sprung the torpedo will be fired. The torpedo can be dipped in melted paraffine to make it waterproof. The thread should be kept very slack so that shrinkage due to moisture will not spring the trap.

"When the deer walk into the thread the trap will go off, firing the torpedo with a loud report and scaring the deer out of the field. If this is kept up, the deer will learn to avoid the field. A number of these can be set in a field at a trifling cost. We have used these in cranberry bogs which would be almost impossible to fence in or protect otherwise.

"A third method is to keep a dog tied in the field, or to train a dog to run the deer out. If the right kind of a dog is found this method is successful, but deer often will pay no attention to a dog when they find that it will not bother them."

FEBRUARY, 1937



# HOW TO GROW 99.1% CLEAN APPLES

**O. G. JONES, last year's winner of the 'Master Award' of the Illinois 95% Clean Apple Club, says quick coverage with a BEAN 'Royal' is a Big Help . . .**

Mr. Jones whose orchard is located near Mt. Sterling, Illinois, "and follow only the advice of the University of Illinois Horticultural Department and the Illinois Agricultural Experiment Station in matters of spraying and orchard sanitation. "One of the principal facilities which I believe has aided us greatly in obtaining clean fruit is quick coverage of the orchard when spraying. Using three men on our spray rig we are able to cover the entire acreage on both sides of the trees in two days.

"We have a 35-gallon outfit, spray at 600 pounds pres-

sure. We have a first class sprayer and lose no time with troubles and delays."

Mr. Jones' sprayer is a BEAN "Royal" and he tells us that he would buy the same thing again if he were in the market for more equipment.

**YOU NEED A FIRST CLASS SPRAYER TO KEEP UP WITH TODAY'S DEMANDS**

● You need pressure to reach right up into the tops of the tallest trees . . . the real *danger zone* . . . where pests often escape and blemished fruits cut down the profit.

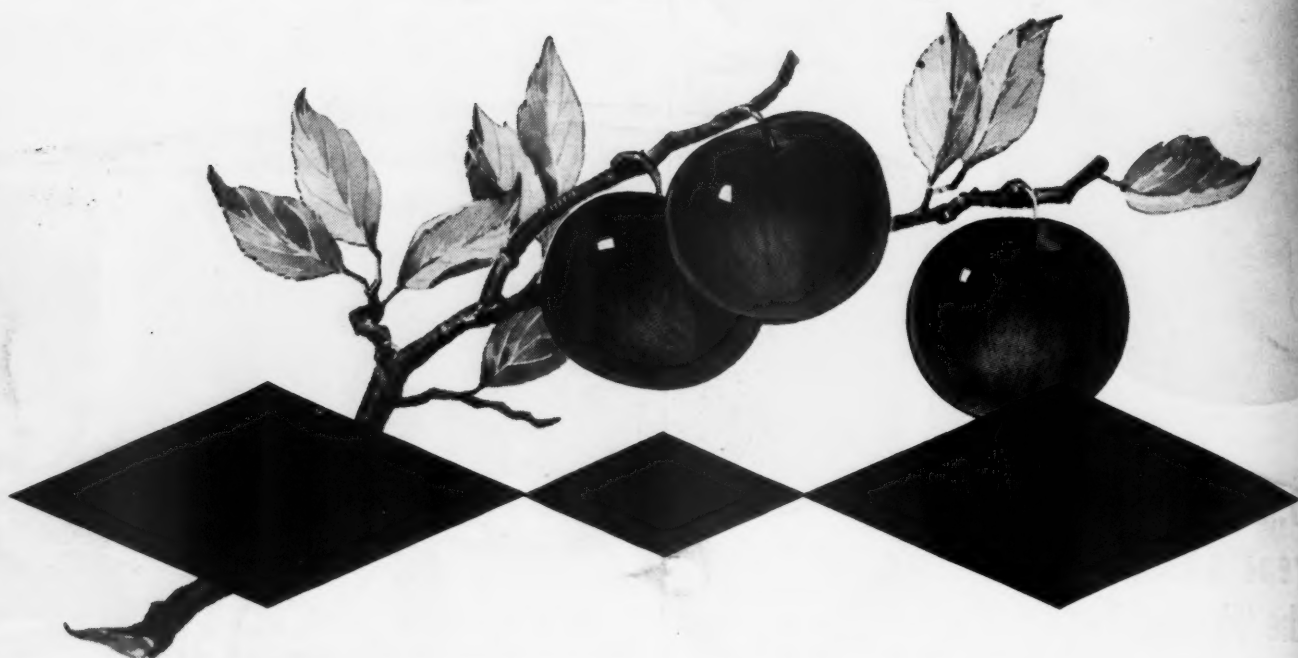
You need ample capacity and steady trouble-free operation to get over your orchard at top speed during the critical spraying periods. You need a new BEAN . . . with the famous All-Enclosed BEAN "Royal" Pump, friction-less ball and roller bearings throughout, automatic lubrication, all-metal construction, BEAN time-proven porcelain-lined cylinders, and all dependable features developed by BEAN through over fifty-three years of experience. See your nearest BEAN dealer for full information. **SIGN and SEND THE COUPON!**



**BEAN ALSO BUILDS A COMPLETE LINE OF DUSTERS, CLEANERS & WASHERS**

**BEAN** Full-Armored  
**'Royal' SPRAYERS**

# A good Start for a grand *finish*!



There is only one way to get off to a good start in the fruit growing business. Take full advantage of the latest advances in spray materials.

For example, DOW has been concentrating on the two most important types of sprays—the dormant oil and wettable sulfur.

In its laboratories, under the able direction of insecticide experts, it analyzed and re-analyzed countless spray materials—striving for something superior to anything so far produced.

Then it put its findings to the tell-tale test of actual orchard experience.

In both instances it met with sensational success.

Every orchardist knows the big advances registered in wettable sulfur with Dow "MIKE" Sulfur—how it made a nation-wide reputation in a single season.

Now, DOW offers, as a companion spray, Dowspray Dormant—an achievement of equal importance.

These two spray materials offer American fruit growers unparalleled protection against profit destroying insects and fungus diseases.

They are two powerful allies that you can depend on for "fine finish" crops that bring the high dollar price.

Let your dealer tell you more about dependable DOW Insecticides or write for detailed information.



## DOW "MIKE" SULFUR

... is a better wettable sulfur ... goes into suspension faster ... stays in suspension longer ... needs no agitator ... ultra-fine, particle size is approximately 1/5000th of an inch, 15 times finer than 325 mesh ... has superior sticking qualities ... greater resistance to rain ... does not burn foliage ... higher toxicity, more than 95 per cent active sulfur means more effective crop protection ... does not deteriorate.

## DOWSPRAY DORMANT

... is non-caustic ... non-freezing ... fast and easy to mix —reduces oil deposit on tree ... effective against rosy apple aphid, early summer infestation of green apple aphid, San Jose scale, European red mite and scurfy scale, bud moth on apple and black aphid on sweet cherries. Tests indicate it to be effective against more insects than any dormant spray available.

THE DOW CHEMICAL COMPANY  
MIDLAND, MICHIGAN

Branch Sales Offices: 30 Rockefeller Plaza, New York City • Second and Madison Streets, St. Louis • 135 South La Salle Street, Chicago